6560-50-P

**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Part 52**

**[EPA-R09-OAR-2022-0394; EPA-HQ-OAR-2021-0663; FRL-9772-01-R9]**

# Air Plan Disapproval; California; Interstate Transport of Air Pollution for the 2015 8-hour Ozone National Ambient Air Quality Standards

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** Pursuant to the Clean Air Act (CAA or the "Act"), the Environmental Protection Agency (EPA) is proposing to disapprove a State Implementation Plan (SIP) submittal from California addressing interstate transport for the 2015 8-hour ozone national ambient air quality standards (NAAQS). The "good neighbor" or "interstate transport" provision of the Act requires that each state's SIP contain adequate provisions to prohibit emissions from within the state from significantly contributing to nonattainment or interfering with maintenance of the NAAQS in other states. This requirement is part of the broader set of "infrastructure" requirements, which are designed to ensure that the structural components of each state's air quality management program are adequate to meet the state's responsibilities under the CAA. This disapproval, if finalized, will establish a 2-year deadline for the EPA to promulgate a Federal Implementation Plan (FIP) to address the relevant interstate transport requirements, unless the EPA approves a subsequent SIP submittal that meets these requirements. Disapproval does not start a mandatory sanctions clock.

**DATES:** *Comments:* Written comments must be received on or before **[insert date 60 days after date of publication in the *Federal Register*]**.

**ADDRESSES:** You may send comments, identified as Docket No. EPA-R09-OAR-2022-0394, by any of the following methods: Federal eRulemaking Portal at *https://www.regulations.gov* following the online instructions for submitting comments or via email to

*kelly.thomasp@epa.gov*. Include Docket ID No. EPA-R09-OAR-2022-0394 in the subject line of the message.

*Instructions*: All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to *https://www.regulations.gov*, including any personal information provided. For detailed instructions on sending comments and additional information on the rulemaking process, see the "Public Participation" heading of the SUPPLEMENTARY INFORMATION section of this document.

**FOR FURTHER INFORMATION CONTACT:** Tom Kelly, EPA Region IX, 75 Hawthorne St., San Francisco, CA 94105. By phone: 415-972-3856 or by email at *kelly.thomasp@epa.gov*.

**SUPPLEMENTARY INFORMATION:** *Public Participation:* Submit your comments, identified by Docket ID No. EPA-R09-OAR-2022-0394, at *https://www.regulations.gov* (our preferred method), or the other methods identified in the ADDRESSES section. Once submitted, comments cannot be edited or removed from the docket. The EPA may publish any comment received to its public docket. Do not submit to EPA's docket at *https://www.regulations.gov* any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the web, cloud, or other file sharing system).

There are two dockets supporting this action, EPA-R09-OAR-2022-0394 and EPA-HQ-OAR-2021-0663. Docket No. EPA-R09-OAR-2022-0394 contains information specific to California**,** including the notice of proposed rulemaking. Docket No. EPA-HQ-OAR-2021-0663 contains additional modeling files, emissions inventory files, technical support documents, and other relevant supporting documentation regarding interstate transport of emissions for the 2015 8-hour ozone NAAQS that are being used to support this action. All comments regarding

information in either of these dockets are to be made in Docket No. EPA-R09-OAR-2022-0394. For additional submission methods, if you need assistance in a language other than English, or if you are a person with disabilities who needs a reasonable accommodation at no cost to you, please contact Tom Kelly, (415) 972-3856, *kelly.thomasp@epa.gov*. For the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit *https://www.epa.gov/dockets/commenting-epa-dockets.*

The index to the docket for this action, Docket No. EPA-R09-OAR-2022-0394, is available electronically at *www.regulations.gov*. While all documents in the docket are listed in the index, some information may not be publicly available due to docket file size restrictions or content (e.g., CBI).

Throughout this document, "we," "us," and "our" means the EPA.

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## I. Background

### *A. Description of Statutory Background*

On October 1, 2015, the EPA promulgated a revision to the ozone NAAQS ("2015 8-hour ozone NAAQS"), lowering the level of both the primary and secondary standards to 0.070 parts per million (ppm).[1] Section 110(a)(1) of the CAA requires states to submit, within 3 years after promulgation of a new or revised standard, SIP submissions meeting the applicable requirements of section 110(a)(2).[2] One of these applicable requirements is found in CAA section 110(a)(2)(D)(i)(I), otherwise known as the "interstate transport" or "good neighbor" provision, which generally requires SIPs to contain adequate provisions to prohibit in-state emissions activities from having certain adverse air quality effects on other states due to interstate transport of pollution. There are two so-called "prongs" within CAA section 110(a)(2)(D)(i)(I). An interstate SIP submission for a new or revised NAAQS must contain adequate provisions prohibiting any source or other type of emissions activity within the state from emitting air pollutants in amounts that will significantly contribute to nonattainment of the NAAQS in another state (prong 1) or interfere with maintenance of the NAAQS in another state (prong 2). The EPA and states must give independent significance to prong 1 and prong 2 when evaluating downwind air quality problems under CAA section 110(a)(2)(D)(i)(I).[3]

*B. Description of the EPA's Four Step Interstate Transport Regulatory Process*

The EPA is using the 4-step interstate transport framework (or 4-step framework) to evaluate the state's SIP submittal addressing the interstate transport provision for the 2015 8-hour ozone NAAQS. The EPA has addressed the interstate transport requirements of CAA section 110(a)(2)(D)(i)(I) with respect to prior ozone NAAQS in several regional regulatory actions, including the Cross-State Air Pollution Rule (CSAPR), which addressed interstate transport with respect to the 1997 ozone NAAQS as well as the 1997 and 2006 fine particulate

[1] National Ambient Air Quality Standards for Ozone, Final Rule, 80 FR 65292 (October 26, 2015). Although the level of the standard is specified in the units of ppm, ozone concentrations are also described in parts per billion (ppb). For example, 0.070 ppm is equivalent to 70 ppb.

[2] SIP revisions that are intended to meet the applicable requirements of section 110(a)(1) and (2) of the CAA are often referred to as infrastructure SIPs and the applicable elements under section 110(a)(2) are referred to as infrastructure requirements.

[3] See *North Carolina v. EPA*, 531 F.3d 896, 909-11 (D.C. Cir. 2008).

matter standards,[4] and the Cross-State Air Pollution Rule Update (CSAPR Update)[5] and the Revised CSAPR Update, both of which addressed the 2008 ozone NAAQS.[6] Through the development and implementation of the CSAPR rulemakings and prior regional rulemakings pursuant to the interstate transport provision,[7] the EPA, working in partnership with states, developed the following 4-step framework to evaluate a State's obligations to eliminate interstate transport emissions under the interstate transport provision for the ozone NAAQS: (1) identify monitoring sites that are projected to have problems attaining and/or maintaining the NAAQS (i.e., nonattainment and/or maintenance receptors); (2) identify states that impact those air quality problems in other (i.e., downwind) states sufficiently such that the states are considered "linked" and therefore warrant further review and analysis; (3) identify the emissions reductions necessary (if any), applying a multifactor analysis, to eliminate each linked upwind state's significant contribution to nonattainment or interference with maintenance of the NAAQS at the locations identified in Step 1; and (4) adopt permanent and enforceable measures needed to achieve those emissions reductions.

*C. Background on the EPA's Ozone Transport Modeling Information*

The EPA has performed nationwide air quality modeling to project ozone design values that are used in combination with measured data to identify nonattainment and maintenance receptors. To quantify the contribution of emissions from specific upwind states to 2023 ozone design values for the identified downwind nonattainment and maintenance receptors, the EPA

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[4] See Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals, 76 FR 48208 (Aug. 8, 2011).
[5] Cross-State Air Pollution Rule Update for the 2008 Ozone NAAQS, 81 FR 74504 (Oct. 26, 2016).
[6] In 2019, the D.C. Circuit Court of Appeals remanded the CSAPR Update to the extent it failed to require upwind states to eliminate their significant contribution by the next applicable attainment date by which downwind states must come into compliance with the NAAQS, as established under CAA section 181(a). *Wisconsin v. EPA*, 938 F.3d 303, 313 (D.C. Cir. 2019). The Revised CSAPR Update for the 2008 Ozone NAAQS, 86 FR 23054 (April 30, 2021), responded to the remand of the CSAPR Update in *Wisconsin* and the vacatur of a separate rule, the "CSAPR Close-Out," 83 FR 65878 (December 21, 2018), in *New York v. EPA*, 781 F. App'x. 4 (D.C. Cir. 2019).
[7] In addition to the CSAPR rulemakings, other regional rulemakings addressing ozone transport include the "$NO_x$ SIP Call," 63 FR 57356 (October 27, 1998), and the "Clean Air Interstate Rule" (CAIR), 70 FR 25162 (May 12, 2005).

performed nationwide, state-level ozone source apportionment modeling. The source apportionment modeling provided contributions to ozone at receptors from precursor emissions of anthropogenic nitrogen oxides ($NO_X$) and volatile organic compounds (VOCs) in individual states and other sources.[8]

The EPA has released several documents containing projected ozone design values, contributions, and information relevant to evaluating interstate transport with respect to the 2015 8-hour ozone NAAQS. First, on January 6, 2017, the EPA published a notice of data availability (NODA) in which we requested comment on preliminary interstate ozone transport data including projected ozone design values and interstate contributions for 2023 using a 2011 base year platform.[9] In the NODA, the EPA used the year 2023 as the analytic year for this preliminary modeling because that year aligns with the expected attainment year for "Moderate" ozone nonattainment areas for the 2015 8-hour ozone NAAQS.[10] On October 27, 2017, we released a memorandum using the "en" emissions inventory ("October 2017 memorandum") containing updated modeling data for 2023, which incorporated changes made in response to comments on the NODA, and noted that the modeling may be useful for states developing SIPs to address interstate transport obligations for the 2008 ozone NAAQS.[11] On March 27, 2018, we issued a memorandum ("March 2018 memorandum") noting that the same 2023 modeling data released in the October 2017 memorandum could also be useful for identifying potential downwind air quality problems with respect to the 2015 8-hour ozone NAAQS at Step 1 of the 4-step interstate transport framework.[12] The March 2018 memorandum also included the then

[8] More information on the source apportionment modeling can be found in the Air Quality Modeling Technical Support Document for the 2015 Ozone NAAQS Transport SIP Proposed Actions.
[9] See Notice of Availability of the Environmental Protection Agency's Preliminary Interstate Ozone Transport Modeling Data for the 2015 8-hour Ozone National Ambient Air Quality Standard (NAAQS), 82 FR 1733 (January 6, 2017).
[10] 82 FR 1733, 1735.
[11] See Information on the Interstate Transport State Implementation Plan Submissions for the 2008 Ozone National Ambient Air Quality Standards under Clean Air Act Section 110(a)(2)(D)(i)(I), October 27, 2017, available in docket ID No. EPA-HQ-OAR-2021-0663.
[12] See Information on the Interstate Transport State Implementation Plan Submissions for the 2015 Ozone National Ambient Air Quality Standards under Clean Air Act Section 110(a)(2)(D)(i)(I), March 27, 2018 ("March 2018 memorandum"), available in docket ID No. EPA-HQ-OAR-2021-0663.

newly available contribution modeling data for 2023 to assist states in evaluating their impact on potential downwind air quality problems for the 2015 8-hour ozone NAAQS under Step 2 of the 4-step interstate transport framework.[13] The EPA subsequently issued two more memoranda in August and October 2018, providing additional information to states developing interstate transport SIP submissions for the 2015 8-hour ozone NAAQS concerning, respectively, potential contribution thresholds that may be appropriate to apply in Step 2 of the 4-step interstate transport framework, and considerations for identifying downwind areas that may have problems maintaining the standard at Step 1 of the 4-step interstate transport framework.[14]

Since the release of the modeling data shared in the March 2018 memorandum, the EPA performed updated modeling using a 2016-based emissions modeling platform (i.e., 2016v1). This emissions platform was developed under the EPA/Multi-Jurisdictional Organization (MJO)/state collaborative project.[15] This collaborative project was a multi-year joint effort by the EPA, MJOs, and states to develop a new, more recent emissions platform for use by the EPA and states in regulatory modeling as an improvement over the dated 2011-based platform that the EPA had used to project ozone design values and contribution data provided in the 2017 and 2018 memoranda. The EPA used the 2016v1 emissions to project ozone design values and contributions for 2023. On October 30, 2020, in the notice of proposed rulemaking for the Revised CSAPR Update, the EPA released and accepted public comment on 2023 modeling that used the 2016v1 emissions platform.[16] Although the Revised CSPAR Update addressed transport for the 2008 ozone NAAQS, the projected design values and contributions from the 2016v1

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[13] The March 2018 memorandum, however, provided, "While the information in this memorandum and the associated air quality analysis data could be used to inform the development of these SIPs, the information is not a final determination regarding states' obligations under the good neighbor provision. Any such determination would be made through notice-and-comment rulemaking."

[14] See Analysis of Contribution Thresholds for Use in Clean Air Act Section 110(a)(2)(D)(i)(I) Interstate Transport State Implementation Plan Submissions for the 2015 Ozone National Ambient Air Quality Standards, August 31, 2018 ("August 2018 memorandum"), and Considerations for Identifying Maintenance Receptors for Use in Clean Air Act Section 110(a)(2)(D)(i)(I) Interstate Transport State Implementation Plan Submissions for the 2015 Ozone National Ambient Air Quality Standards, October 19, 2018 ("October 2018 memorandum"), available in docket ID No. EPA-HQ-OAR-2021-0663.

[15] The results of this modeling, as well as the underlying modeling files, are included in docket ID No. EPA-HQ-OAR-2021-0663.

[16] See 85 FR 68964, 68981.

platform are also useful for identifying downwind ozone problems and linkages with respect to the 2015 ozone NAAQS.[17]

Following the final Revised CSAPR Update, the EPA made further updates to the 2016 emissions platform to include mobile emissions from the EPA's Motor Vehicle Emission Simulator MOVES3 model[18] and updated emissions projections for electric generating units (EGUs) that reflect the emissions reductions from the Revised CSAPR Update, recent information on plant closures, and other sector trends. The construct of the updated emissions platform, 2016v2, is described in the emissions modeling technical support document (TSD) for this proposed rule.[19] The EPA performed air quality modeling of the 2016v2 emissions using the most recent public release version of the Comprehensive Air-quality Model with extensions (CAMx) photochemical modeling, version 7.10.[20] The EPA now proposes to primarily rely on modeling based on the updated and newly available 2016v2 emissions platform in evaluating these submissions with respect to Steps 1 and 2 of the 4-step interstate transport framework and generally referenced within this action as 2016v2 modeling for 2023. By using the updated modeling results, the EPA is using the most current and technically appropriate information for this proposed rulemaking. Section III.C. of this notice and the Air Quality Modeling TSD for 2015 Ozone NAAQS Transport SIP Proposed Actions, included in Docket ID No. EPA-HQ-OAR-2021-0663 for this proposal, contain additional detail on the EPA's 2016v2 modeling. In this notice, the EPA is accepting public comment on this updated 2023 modeling, which uses the 2016v2 emissions platform. Comments on the EPA's air quality modeling should be submitted in the Regional docket for this action, docket ID No. EPA-R09-OAR-2022-0394. Comments are not being accepted in docket ID No. EPA-HQ-OAR-2021-0663.

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[17] See the Air Quality Modeling Technical Support Document for the Final Revised Cross-State Air Pollution Rule Update, included in the Headquarters docket ID No. EPA-HQ-OAR-2021-0663.
[18] Additional details and documentation related to the MOVES3 model can be found at *https://www.epa.gov/moves/latest-version-motor-vehicle-emission-simulator-moves.*
[19] See Technical Support Document (TSD) Preparation of Emissions Inventories for the 2016v2 North American Emissions Modeling Platform included in the Headquarters docket ID No. EPA-HQ-OAR-2021-0663.
[20] Ramboll Environment and Health, January 2021, *www.camx.com*.

States may have chosen to rely on the results of EPA modeling and/or alternative modeling performed by states or MJOs to evaluate downwind air quality problems and contributions as part of their submissions. In Section III.A. and III.B. we evaluate how California used air quality modeling information in their submission.

*D. The EPA's Approach to Evaluating Interstate Transport SIPs for the 2015 8-hour ozone NAAQS*

The EPA proposes to apply a consistent set of policy judgments across all states for purposes of evaluating interstate transport obligations and the approvability of interstate transport SIP submittals for the 2015 8-hour ozone NAAQS. These policy judgments reflect consistency with relevant case law and past agency practice as reflected in the CSAPR and related rulemakings. Nationwide consistency in approach is particularly important in the context of interstate ozone transport, which is a regional-scale pollution problem involving many smaller contributors. Effective policy solutions to the problem of interstate ozone transport going back to the $NO_X$ SIP Call have necessitated the application of a uniform framework of policy judgments in order to ensure an "efficient and equitable" approach. See *EME Homer City Generation, LP v. EPA*, 572 U.S. 489, 519 (2014).

In the March, August, and October 2018 memoranda, the EPA recognized that states may be able to establish alternative approaches to addressing their interstate transport obligations for the 2015 8-hour ozone NAAQS that vary from a nationally uniform framework. The EPA emphasized in these memoranda, however, that such alternative approaches must be technically justified and appropriate in light of the facts and circumstances of each particular state's submittal. In general, the EPA continues to believe that deviation from a nationally consistent approach to ozone transport must be substantially justified and have a well-documented technical basis that is consistent with relevant case law. Where states submitted SIPs that rely on any such potential "flexibilities" as may have been identified or suggested in the past, the EPA will evaluate whether the state adequately justified the technical and legal basis for doing so.

The EPA notes that certain concepts included in an attachment to the March 2018 memorandum require unique consideration, and these ideas do not constitute agency guidance with respect to transport obligations for the 2015 ozone NAAQS. Attachment A to the March 2018 memorandum identified a "Preliminary List of Potential Flexibilities" that could potentially inform SIP development.[21] However, the EPA made clear in that Attachment that the list of ideas were not suggestions endorsed by the Agency but rather "comments provided in various forums" on which the EPA sought "feedback from interested stakeholders."[22] Further, Attachment A stated, "EPA is not at this time making any determination that the ideas discussed below are consistent with the requirements of the CAA, nor are we specifically recommending that states use these approaches."[23] Attachment A to the March 2018 memorandum, therefore, does not constitute agency guidance, but was intended to generate further discussion around potential approaches to addressing ozone transport among interested stakeholders. To the extent states sought to develop or rely on these ideas in support of their SIP submittals, the EPA will thoroughly review the technical and legal justifications for doing so.

The remainder of this section describes the EPA's proposed framework with respect to analytic year, definition of nonattainment and maintenance receptors, selection of contribution threshold, and multifactor control strategy assessment.

1. Selection of Analytic year

In general, the states and the EPA must implement the interstate transport provision in a manner "consistent with the provisions of [title I of the CAA.]" CAA section 110(a)(2)(D)(i). This requires, among other things, that these obligations are addressed consistently with the timeframes for downwind areas to meet their CAA obligations. With respect to ozone NAAQS, under CAA section 181(a), this means obligations must be addressed "as expeditiously as practicable" and no later than the schedule of attainment dates provided in CAA section

[21] March 2018 memorandum, Attachment A.
[22] Id. at A-1.
[23] Id.

181(a)(1).[24] Several D.C. Circuit court decisions address the issue of the relevant analytic year for the purposes of evaluating ozone transport air quality problems. On September 13, 2019, the D.C. Circuit issued a decision in *Wisconsin v. EPA*, remanding the CSAPR Update to the extent that it failed to require upwind states to eliminate their significant contribution by the next applicable attainment date by which downwind states must come into compliance with the NAAQS, as established under CAA section 181(a). 938 F.3d at 313.

On May 19, 2020, the D.C. Circuit issued a decision in *Maryland v. EPA* that cited the *Wisconsin* decision in holding that the EPA must assess the impact of interstate transport on air quality at the next downwind attainment date, including "Marginal" area attainment dates, in evaluating the basis for the EPA's denial of a petition under CAA section 126(b). *Maryland v. EPA*, 958 F.3d 1185, 1203-04 (D.C. Cir. 2020). The court noted that "section 126(b) incorporates the Good Neighbor Provision," and, therefore, "EPA must find a violation [of section 126] if an upwind source will significantly contribute to downwind nonattainment at the *next downwind attainment deadline*. Therefore, the agency must evaluate downwind air quality at that deadline, not at some later date." *Id.* at 1204 (emphasis added). The EPA interprets the court's holding in *Maryland* as requiring the states and the Agency, under the good neighbor provision, to assess downwind air quality as expeditiously as practicable and no later than the next applicable attainment date,[25] which is now the Moderate area attainment date under CAA section 181 for ozone nonattainment. The Moderate area attainment date for the 2015 8-hour ozone NAAQS is August 3, 2024.[26] The EPA believes that 2023 is now the appropriate year for analysis of interstate transport obligations for the 2015 8-hour ozone NAAQS, because the 2023

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[24] For attainment dates for the 2015 8-hour ozone NAAQS, refer to CAA section 181(a), 40 CFR 51.1303, and Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards, 83 FR 25776 (June 4, 2018, effective August 3, 2018).

[25] We note that the court in *Maryland* did not have occasion to evaluate circumstances in which the EPA may determine that an upwind linkage to a downwind air quality problem exists at steps 1 and 2 of the interstate transport framework by a particular attainment date, but for reasons of impossibility or profound uncertainty the Agency is unable to mandate upwind pollution controls by that date. See *Wisconsin*, 938 F.3d at 320. The D.C. Circuit noted in *Wisconsin* that upon a sufficient showing, these circumstances may warrant flexibility in effectuating the purpose of the interstate transport provision.

[26] See CAA section 181(a); 40 CFR 51.1303; Additional Air Quality Designations for the 2015 Ozone National Ambient Air Quality Standards, 83 FR 25776 (June 4, 2018, effective Aug. 3, 2018).

ozone season is the last relevant ozone season during which achieved emissions reductions in linked upwind states could assist downwind states with meeting the August 3, 2024 Moderate area attainment date for the 2015 8-hour ozone NAAQS.

The EPA recognizes that the attainment date for nonattainment areas classified as Marginal for the 2015 8-hour ozone NAAQS was August 3, 2021. Under the *Maryland* holding, any necessary emissions reductions to satisfy interstate transport obligations should have been implemented by no later than this date. At the time of the statutory deadline to submit interstate transport SIPs (October 1, 2018), many states relied upon the EPA modeling of the year 2023, and no state provided an alternative analysis using a 2021 analytic year (or the prior 2020 ozone season). However, the EPA must act on SIP submittals using the information available at the time it takes such action. In this circumstance, the EPA does not believe it would be appropriate to evaluate states' obligations under CAA section 110(a)(2)(D)(i)(I) as of an attainment date that is wholly in the past, because the Agency interprets the interstate transport provision as forward looking. See 86 FR at 23054, 23074; see also *Wisconsin*, 938 F.3d at 322. Consequently, in this proposal the EPA will use the analytical year of 2023 to evaluate each state's CAA section 110(a)(2)(D)(i)(I) SIP submission with respect to the 2015 8-hour ozone NAAQS.

2. Step 1 of the 4-Step Interstate Transport Framework

In Step 1, the EPA identifies monitoring sites that are projected to have problems attaining and/or maintaining the NAAQS in the 2023 analytic year. Where the EPA's analysis shows that a site does not fall under the definition of a nonattainment or maintenance receptor, that site is excluded from further analysis under the EPA's 4-step interstate transport framework. For sites that are identified as a nonattainment or maintenance receptor in 2023, we proceed to the next step of our 4-step interstate transport framework by identifying the upwind state's contribution to those receptors.

The EPA's approach to identifying ozone nonattainment and maintenance receptors in this action is consistent with the approach used in previous transport rulemakings. The EPA's

approach gives independent consideration to both the "contribute significantly to nonattainment" and the "interfere with maintenance" prongs of CAA section 110(a)(2)(D)(i)(I), consistent with the D.C. Circuit's direction in *North Carolina v. EPA*.[27]

For the purpose of this proposal, the EPA identifies nonattainment receptors as those monitoring sites that are projected to have average design values that exceed the NAAQS and that are also measuring nonattainment based on the most recent monitored design values. This approach is consistent with prior transport rulemakings, such as the CSAPR Update, where the EPA defined nonattainment receptors as those areas that both currently measure nonattainment and that the EPA projects will be in nonattainment in the future analytic year (i.e., 2023).[28]

In addition, in this proposal, the EPA identifies a receptor to be a "maintenance" receptor for purposes of defining interference with maintenance, consistent with the method used in the CSAPR and upheld by the D.C. Circuit in *EME Homer City Generation, L.P. v. EPA*, 795 F.3d 118, 136 (D.C. Cir. 2015).[29] Specifically, the EPA identified maintenance receptors as those receptors that would have difficulty maintaining the relevant NAAQS in a scenario that takes into account historical variability in air quality at that receptor. The variability in air quality was determined by evaluating the "maximum" future design value at each receptor based on a projection of the maximum measured design value over the relevant base period. The EPA interprets the projected maximum future design value to be a potential future air quality outcome consistent with the meteorology that yielded maximum measured concentrations in the ambient data set analyzed for that receptor (i.e., ozone conducive meteorology). The EPA also recognizes that previously experienced meteorological conditions (e.g., dominant wind direction, temperatures, vertical mixing, insolation, and air mass patterns) promoting ozone formation that

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[27] See *North Carolina v. EPA*, 531 F.3d at 910-11 (holding that the EPA must give "independent significance" to each prong of CAA section 110(a)(2)(D)(i)(I)).

[28] See 81 FR 74504 (October 26, 2016). This same concept, relying on both current monitoring data and modeling to define nonattainment receptors, was also applied in CAIR. *See* 70 FR 25162, 25241 and 25249 (January 14, 2005); see also *North Carolina*, 531 F.3d at 913-14 (affirming as reasonable EPA's approach to defining nonattainment in CAIR).

[29] See 76 FR 48208 (August 8, 2011). CSAPR Update and Revised CSAPR Update also used this approach. See 81 FR 74504 (October 26, 2016) and 86 FR 23054 (April 30, 2021).

led to maximum concentrations in the measured data may reoccur in the future. The maximum design value gives a reasonable projection of future air quality at the receptor under a scenario in which such conditions do, in fact, reoccur. The projected maximum design value is used to identify upwind emissions that, under those circumstances, could interfere with the downwind area's ability to maintain the NAAQS.

Recognizing that nonattainment receptors are also, by definition, maintenance receptors, the EPA often uses the term "maintenance-only" to refer to those receptors that are not nonattainment receptors. Consistent with the concepts for maintenance receptors, as described above, the EPA identifies "maintenance-only" receptors as those monitoring sites that have projected average design values above the level of the applicable NAAQS, but that are not currently measuring nonattainment based on the most recent official design values. In addition, those monitoring sites with projected average design values below the NAAQS, but with projected maximum design values above the NAAQS are also identified as "maintenance only" receptors, even if they are currently measuring nonattainment based on the most recent official design values.

3. Step 2 of the 4-Step Interstate Transport Framework

In Step 2 the EPA quantifies the contribution of each upwind state to each receptor in the 2023 analytic year. The contribution metric used in Step 2 is defined as the average impact from each state to each receptor on the days with the highest ozone concentrations at the receptor based on the 2023 modeling. If a state's contribution value does not equal or exceed the threshold of 1 percent of the NAAQS (i.e., 0.70 ppb for the 2015 8-hour ozone NAAQS), the upwind state is not "linked" to a downwind air quality problem, and the EPA, therefore, concludes that the state does not significantly contribute to nonattainment or interfere with maintenance of the NAAQS in the downwind states. However, if a state's contribution equals or exceeds the 1 percent threshold, the state's emissions are further evaluated in Step 3, considering both air quality and cost as part of a multi-factor analysis, to determine what, if any, emissions

might be deemed "significant" and, thus, must be eliminated under CAA section 110(a)(2)(D)(i)(I). The EPA is proposing to rely in the first instance on the 1 percent threshold for the purpose of evaluating a state's contribution to nonattainment or maintenance of the 2015 8-hour ozone NAAQS (i.e., 0.70 ppb) at downwind receptors. This is consistent with the Step 2 approach that the EPA applied in CSAPR for the 1997 ozone NAAQS, which has subsequently been applied in the CSAPR Update when evaluating interstate transport obligations for the 2008 ozone NAAQS. The EPA continues to find 1 percent to be an appropriate threshold. For ozone, as the EPA found in the Clean Air Interstate Rule (CAIR), CSAPR, and CSAPR Update, a portion of the nonattainment problems from anthropogenic sources in the U.S. results from the combined impact of relatively small contributions from many upwind states, along with contributions from in-state sources and, in some cases, substantially larger contributions from a subset of particular upwind states. The EPA's analysis shows that much of the ozone transport problem being analyzed in this proposed rule is still the result of the collective impacts of contributions from many upwind states. Therefore, application of a consistent contribution threshold is necessary to identify those upwind states that should have responsibility for addressing their contribution to the downwind nonattainment and maintenance problems to which they collectively contribute. Continuing to use 1 percent of the NAAQS as the screening metric to evaluate collective contribution from many upwind states also allows the EPA (and states) to apply a consistent framework to evaluate interstate emissions transport under the interstate transport provision from one NAAQS to the next. See 81 FR 74504, 74518. See also 86 FR 23054, 23085 (reviewing and explaining rationale from CSAPR, 76 FR 48,208, 48237-38, for selection of 1 percent threshold).

The EPA's August 2018 memorandum recognized that in certain circumstances, a state may be able to establish that an alternative contribution threshold of 1 ppb is justifiable. Where a state relies on this alternative threshold, and where that state determined that it was not linked at Step 2 using the alternative threshold, the EPA will evaluate whether the state provided a

technically sound assessment of the appropriateness of using this alternative threshold based on the facts and circumstances underlying its application in the particular SIP submission.

4. Step 3 of the 4-Step Interstate Transport Framework

Consistent with the EPA's longstanding approach to eliminating significant contribution or interference with maintenance, at Step 3, states linked at Steps 1 and 2 are generally expected to prepare a multifactor assessment of potential emissions controls. The EPA's analysis at Step 3 in prior federal actions addressing interstate transport requirements has primarily focused on an evaluation of cost-effectiveness of potential emissions controls (on a marginal cost-per-ton basis), the total emissions reductions that may be achieved by requiring such controls (if applied across all linked upwind states), and an evaluation of the air quality impacts such emissions reductions would have on the downwind receptors to which a state is linked; other factors may potentially be relevant if adequately supported. In general, where the EPA's or alternative air quality and contribution modeling establishes that a state is linked at Steps 1 and 2, it will be insufficient at Step 3 for a state merely to point to its existing rules requiring control measures as a basis for approval. In general, the emissions-reducing effects of all existing emissions control requirements are already reflected in the air quality results of the modeling for Steps 1 and 2. If the state is shown to still be linked to one or more downwind receptor(s), states must provide a well-documented evaluation determining whether their emissions constitute significant contribution or interference with maintenance by evaluating additional available control opportunities by preparing a multifactor assessment. While the EPA has not prescribed a particular method for this assessment, the EPA expects states at a minimum to present a sufficient technical evaluation. This would typically include information on emissions sources, applicable control technologies, emissions reductions, costs, cost effectiveness, and downwind

air quality impacts of the estimated reductions, before concluding that no additional emissions controls should be required.[30]

5. Step 4 of the 4-Step Interstate Transport Framework

At Step 4, states (or the EPA) develop permanent and federally enforceable control strategies to achieve the emissions reductions determined to be necessary at Step 3 to eliminate significant contribution to nonattainment or interference with maintenance of the NAAQS. For a state linked at Steps 1 and 2 to rely on an emissions control measure at Step 3 to address its interstate transport obligations, that measure must be included in the state's SIP so that it is permanent and federally enforceable. See CAA section 110(a)(2)(D) ("Each such [SIP] shall . . . contain adequate provisions . . . ."). See also CAA 110(a)(2)(A); *Committee for a Better Arvin v. U.S. E.P.A.*, 786 F.3d 1169, 1175-76 (9th Cir. 2015) (holding that measures relied on by state to meet CAA requirements must be included in the SIP).

## II. SIP Submission Addressing Interstate Transport of Air Pollution for the 2015 8-hour ozone NAAQS

In California, the California Air Resources Board (CARB or "State") is the state agency responsible for the adoption and submission to the EPA of California state, county, and local SIPs and SIP revisions. CARB submitted its infrastructure SIP revision ("2018 Infrastructure SIP," "California's 2018 Submittal,", or "2018 Submittal") for the 2015 ozone NAAQS on October 1, 2018.[31] In 2021, the EPA finalized action on most of the "infrastructure" requirements in that submittal but did not act on the interstate transport requirements of 110(a)(2)(D)(i)(I).[32] We are proposing action on the interstate transport portions of California's 2018 Submittal in this action.

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[30] As examples of general approaches for how such an analysis could be conducted for their sources, states could look to the CSAPR Update, 81 FR 74504, 74539-51; CSAPR, 76 FR 48208, 48246-63; CAIR, 70 FR 25162, 25195-229; or the $NO_X$ SIP Call, 63 FR 57356, 57399-405. See also Revised CSAPR Update, 86 FR 23054, 23086-23116. Consistently across these rulemakings, the EPA has developed emissions inventories, analyzed different levels of control stringency at different cost thresholds, and assessed resulting downwind air quality improvements.

[31] Letter dated October 1, 2018, from Richard W. Corey, Executive Officer, CARB, to Michael Stoker, Regional Administrator, EPA Region IX.

[32] 86 FR 16533 (March 30, 2021).

A. Information provided at Steps 1 and 2

Enclosure 4 of California's 2018 Submittal contains the state's "Good Neighbor State Implementation Plan." For Steps 1 and 2 of its four-step analysis, California reviewed the results of the EPA's modeling runs released with the January 2017 NODA, the October 2017 memorandum, and the March 2018 memorandum.[33] CARB presented modeled design values for monitoring sites that the modeling released with the January 2017 NODA or the October 2017 memoranda projected to be nonattainment or maintenance receptors in 2023, using the EPA's definition of those terms.[34] CARB explained it focused its evaluation on receptor sites in Colorado and Arizona because those were the western states, other than California, where the EPA's modeling identified nonattainment or maintenance sites in 2023 using the data in the March 2018 memorandum.[35] Accordingly, CARB identified the following receptor sites and modeled design values, noting that the EPA's modeling released with the October 2017 memorandum and March 2018 memorandum yielded the same design values for 2023.[36]

Table 1: Modeled Receptor Design Values in Western States in California's 2018 Submittal

| Site | County | AQS # | January 2017 Modeling-Average 2023 DV (ppb) | January 2017 Modeling-Maximum 2023 DV (ppb) | October 2017 Modeling-Average 2023 DV (ppb) | October 2017 Modeling-Maximum 2023 DV (ppb) |
|---|---|---|---|---|---|---|
| Colorado | | | | | | |
| Chatfield | Douglas | 08–035–0004 | 69.6 | 71.6 | 71.1 | 73.2 |
| Rocky Flats North | Jefferson | 08–059–0006 | 70.5 | 72.9 | 71.3 | 73.7 |
| NREL | Jefferson | 08–059–0011 | 69.7 | 72.7 | 70.9 | 73.9 |
| Fort Collins West | Larimer | 08–069–0011 | 68.6 | 70.4 | 71.2 | 73.0 |
| Highland Reservoir | Arapahoe | 08–005–0002 | 68.0 | 70.0 | 69.3 | 71.3 |
| Weld Co. Tower | Weld | 08–123–0009 | 67.2 | 68.3 | 70.2 | 71.4 |
| Arizona | | | | | | |

[33] California's 2018 Submittal, p. A4-10.
[34] Id. at A4-11, Table 1.
[35] Id. at A4-10.
[36] Id.

| | | | | | | |
|---|---|---|---|---|---|---|
| West Phoenix | Maricopa | 04–013–0019 | 67.9 | 70.0 | 69.3 | 71.4 |
| North Phoenix | Maricopa | 04–013–1004 | 68.7 | 69.8 | 69.8 | 71.0 |

Source: California's 2018 Submittal, p. A4-11, Table 1.

To "assess the potential for transport impacts from California to Colorado receptors," CARB identified geographic and meteorologic features of the Denver Metro/North Front Range nonattainment area.[37] Geographic features identified by CARB included the Front Range, extending up to 8,000 feet in elevation on the western side of the metropolitan area, as well as mountains on the southern and southeastern end of the area. CARB noted that both form barriers to air flow.[38] CARB also notes that to the east and north of the Denver area are gradually rising hills that generally are open to airflow with the Denver area. Meteorological conditions identified by CARB include sunlight, temperature and winds conducive to formation of ozone, and diurnal recirculation that allows emissions and ozone concentrations to build up over multi-day periods.[39] CARB additionally notes that this terrain, combined with unique atmospheric conditions and high temperatures during the summer months, are highly conducive to the accumulation of local emissions and the formation of ozone in the Denver-Aurora-Lakewood Core Based Statistical Area, and, additionally, allows for ozone concentrations to remain higher for more hours, leading to higher 8-hour averages at monitoring sites.

CARB notes additional local features that contribute to high ozone concentrations in the Denver nonattainment area, including upslope and downslope flow in the foothill regions on broad high-pressure days near several violating monitoring sites. CARB also claims that wildfires had an impact on ozone concentrations in the Denver area, specifically noting that on September 4, 2017, large wildfire events across five western states brought plumes of smoke southward along the Front Range, inevitably mixing with the surface, and as a result, elevated

[37] Id. at A4-13.
[38] Id.
[39] Id. at A4-13-A4-14.

ozone concentrations were observed at the Rocky Flats North site, reaching 0.078 ppm 8-hour average ozone concentrations.

CARB conducted a trajectory analysis from California to Colorado using the National Oceanic and Atmospheric Administration (NOAA) Hybrid Single Particle Lagrangian Integrated Trajectory (HYSPLIT) model.[40] CARB found that only two percent of nearly 500 backward trajectories from Colorado receptor sites on high ozone days in June and July (initiated from 10, 1000, and 2000 meters above ground level with a duration of 96 hours) indicated air parcels may have traveled from a mixed layer within California, where pollutants become well dispersed, to a mixed layer at the Colorado receptor sites.[41] CARB also found only one forward trajectory (starting at 10 meters above the ground with a duration of 96 hours) from the mixed layer in California reached the mixed layer at a Colorado receptor site.[42]According to CARB, this suggests that the complexity of the physical environment between California and Colorado limits the reproducibility of modeled transport and that considerable multi-faceted analyses would be necessary to explore transport mechanisms through areas of complex terrain.[43]

CARB's conclusion based on the HYSPLIT trajectories was that upper-level air was almost always above the mixed layer over California, Colorado, or both.[44] Without vertical mixing of the air between the mixed layer near the ground and the upper level, CARB asserted, little to no impact from transport of emissions or pollutants would be expected at the surface.[45] CARB concluded that transport from California emissions sources to Colorado is possible but extremely unlikely on high ozone days at the Colorado receptor sites identified by the EPA modeling.[46] CARB also noted that this conclusion appeared consistent with Colorado's weight of

[40] Id. at A4-17.
[41] Id. at A4-17-A4-18.
[42] Id. at A4-18.
[43] Id.
[44] Id.
[45] Id.
[46] Id. at A4-18-A4-19.

evidence (WOE) analysis for its Denver Metro/North Front Range attainment plan SIP submittal for the 0.075 ppm 8-hour ozone standard.[47]

CARB also attempted to rely on one of the preliminary "potential flexibilities" in Attachment A to the EPA's March 2018 memorandum to evaluate California's impacts on receptors in Colorado.[48] CARB cited the idea of "consider[ing] removal of certain data from modeling analysis for the purposes of projecting design values and calculating the contribution metric where data removal is based on model performance and technical analyses support the exclusion."[49] In making use of this potential flexibility, CARB used exceptional event data from Colorado's "weight of evidence" (WOE) analysis included in its Denver Metro/North Front Range attainment SIP submittal for the 0.075 ppm 8-hour ozone standard.[50] CARB asserted that, although Colorado did not submit formal demonstrations for these events under the Exceptional Event Rule because they did not affect design values in the area's attainment year, the EPA concurred with Colorado's assessment that the model Colorado used for its Denver Metro/North Front Range attainment SIP submittal was properly configured, met EPA performance requirements, and was appropriately used in its application.[51]

To recalculate projected design values excluding exceptional event data flagged by Colorado, CARB first calculated design values from prior years for the four monitors analyzed in Colorado's Denver Metro/North Front Range attainment SIP submittal for the 2008 8-hour ozone standard of 0.075 ppm (Chatfield, Rocky Flats North, NREL, and Fort Collins West) as well as for two additional monitors: Highland Reservoir and Weld Co. Tower.[52] CARB found that the average design values for the years 2009-2011, 2010-2012, and 2011-2013 dropped by 1-2 ppb

[47] Id. at A4-19.
[48] Id. at A4-23.
[49] Id. at A4-23. See also March 2018 memorandum, Attachment A at A-2.
[50] California's 2018 Submittal at A4-23-A4-24 (citing 83 FR 14807 (April 6, 2018) and 83 FR 31068 (July 3, 2018)).
[51] Id. at A4-23.
[52] Id. at A4-23-A4-24.

at all six sites when data flagged by Colorado was excluded.[53] CARB found that maximum base year design values dropped by 2-3 ppb.[54]

CARB also attempted to replicate Colorado's future design value calculations from Colorado's WOE analysis to be consistent with Colorado's approach by using the "el" version of the emissions inventory.[55] CARB excluded Colorado's flagged events to recalculate design values for future year modeling for 2023 based on EPA's Good Neighbor SIP modeling released in the January 2017 NODA (using the "el" emissions inventory).[56] CARB calculated that average design values at the six sites dropped by 1 to 2 ppb, and maximum design values dropped by 2 ppb.[57] CARB found this resulted in no nonattainment or maintenance receptors being projected in Colorado in 2023.[58]

CARB repeated the same process with EPA's Good Neighbor SIP modeling released in the October 2017 memorandum using the "en" emissions inventory.[59] CARB found that excluding data flagged by Colorado reduced the 2023 average design values by 0-2 ppb and the maximum design values by 1-2 ppb. CARB asserted that its approach was consistent with Attachment A to the March 2018 memorandum with respect to "collaboration among states linked to a common receptor and among linked upwind and downwind states in developing and applying a regionally consistent approach."[60]

CARB analyzed the projected design values in the October 2017 memorandum and March 2018 memorandum in order to understand why the 2023 design values in Colorado were higher in the latter modeling compared to the former.[61] CARB noted that "receptors" in Colorado based on the January 2017 modeling were clean in 2023 after removing atypical events, but some

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[53] Id. at A4-24.
[54] Id.
[55] Id. at A4-25
[56] Id. at A4-26.
[57] Id. A4-26.
[58] Id.
[59] Id. at A4-27.
[60] Id. at A4-23.
[61] Id. at A4-29.

of these sites became receptors in the March 2018 modeling even after atypical events were removed in the projection of 2023 design values. CARB performed an analysis of contributions and emissions to determine why four monitors in Denver changed from being clean (after removing atypical events) in the older January 2017 modeling to maintenance-only receptors (after removing atypical events) using the March 2018 modeling. CARB concluded that higher emissions, and therefore higher contributions, from Colorado sources were the primary reason why the four monitors changed from clean in the January 2017 modeling to maintenance-only in the March 2018 modeling. CARB used this result to argue that emissions in Colorado, not California, are responsible for the projected maintenance problem at these four receptors.[62] CARB also noted that differences in EPA's methodology for calculating average contributions at individual monitors between the January 2017 NODA and the March 2018 memorandum could have contributed to the receptor changes that CARB identified in its submittal. CARB further noted that the updated emissions inventory ("en") would not have accounted for Colorado's planned controls on Colorado's nonpoint source emissions from oil and gas and therefore overstated those emissions.[63]

Ultimately, CARB decided it was more appropriate to rely on the "en" emissions inventory-based modeling released with the October 2017 memorandum, stating that this would be the more conservative approach.[64]

To analyze receptors in, and California's contributions to, Arizona, CARB first noted that the EPA's modeling released with the October 2017 memorandum identified the West Phoenix and North Phoenix monitoring sites in the Phoenix-Mesa nonattainment area as potential maintenance receptors, while the earlier version of the modeling released with the January 2017 NODA did not project any receptors in Arizona.[65] CARB identified geographic features of the

[62] Id. At A4-29 – A4-33
[63] Id. at A4-31-A4-32.
[64] Id. at A4-32-A4-33.
[65] Id. at A4-35.

Phoenix-Mesa nonattainment area, including the Sierra Estrella Mountains to the southwest, the White Tank Mountains to the west, the Bradshaw Mountains to the north and northeast, the Superstition Mountains to the east, and the South Mountains to the south.[66] CARB explained this "topographic bowl" significantly limits air flow during non-stormy periods.[67] CARB also identified meteorological factors affecting the Phoenix area, such as upper-level high pressure systems over the western U.S. that produce high temperatures, limit cloud formation, and generally lead to light winds.[68] Additional meteorological factors identified by CARB included cooling in the evening that brings emissions and pollutants back to the metropolitan area at night, the summer monsoon, temperature inversions outside of monsoon season, atmospheric mixing heights of several thousand feet on hot afternoons, and "dry" thunderstorms that may ignite wildfires.[69]

CARB also conducted a simplified, short-ranged trajectory analysis.[70] CARB viewed backward HYSPLIT model trajectories for the two receptor sites in Arizona to evaluate the potential for transport of ozone or ozone precursors from California. CARB concluded that air is typically from within the Phoenix area for trajectories at 100 and 500 meters above ground level and that trajectories at 1000 meters are most frequently from the north-northeast, southeast, or southwest. CARB interpreted its analysis to suggest air from California was unlikely to be a significant factor contributing to higher ozone values in Phoenix.[71]

CARB then compared the two receptor sites' 2023 projections from the two versions of transport modeling that EPA released in the January 2017 NODA ("el" emissions inventory) and the October 2017 memorandum ("en" emissions inventory). CARB noted that the design values at the two Arizona sites increased by 1-2 ppb from the earlier to the later version of the EPA's modeling, and that based on the contribution data included in the March 2018 memorandum,

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[66] Id.
[67] Id. at A4-35.
[68] Id. at A4-35-A4-36.
[69] Id. at A4-26.
[70] Id. at A4-39.
[71] Id.

Arizona's own contribution increased by 1.8-2.2 ppb.[72] CARB concluded that the difference in Arizona's design values appeared to be mainly driven from Arizona's own contributions, and that the balance of difference between Arizona's contributions and the changes to the design values came from emissions categorized as "Other", which included emissions from Canada and Mexico.[73] Specifically, CARB noted that fire impacts increased at both sites and that international contributions increased at the West Phoenix site.[74] At both sites, CARB explained that the home state's contribution grew by more than the amount necessary to make the site a maintenance receptor in modeling released with the October 2017 memorandum (using the "en" emissions inventory).[75] CARB also noted that, while Arizona's contribution increased from the modeling released with the January 2017 NODA ("el" emissions inventory) to the modeling results released with the October 2017 memorandum ("en" emissions inventory), California's contribution decreased at both monitoring sites between the same versions.[76]

CARB decided to give more weight to the modeling results released with the October 2017 memorandum ("en" emissions inventory),[77] which indicated that California contributes above 1 percent of the NAAQs to two maintenance receptors in Arizona. However, CARB concluded that the differences between the modeling results based on the "el" and "en" emissions inventories resulting in increased modeled design values for the two maintenance receptors in Arizona were not due to increased contributions from California.[78] Based on this information, CARB found it "reasonable to conclude that emissions from California do not significantly interfere with attainment/maintenance of the 0.070 ppm 8-hour ozone NAAQS at the modeled ozone receptors in Arizona."[79]

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[72] Id. at A4-40.
[73] Id. A4-40-A4-41.
[74] Id. at A4-42.
[75] Id. at A4-43.
[76] Id.
[77] Id. at A4-44.
[78] Id.
[79] Id.

Overall, California's conclusion for Step 2 was that it is linked to downwind sites in Colorado and Arizona, based on the EPA modeling results released with the October 2017 memorandum.[80] However, based on the additional analyses CARB provided at Step 2 (and further analysis of emissions control measures provided at Step 3 of their submittal), CARB concludes that California does not contribute significantly to nonattainment or interfere with maintenance of the 2015 ozone NAAQS in other states.

B. Information Provided at Step 3

For Step 3, CARB reviewed and evaluated California's emissions control measures.[81] CARB noted that, based on the 2011 National Emissions Inventory (NEI) and based on 2023 projected emissions, a $NO_X$ control strategy would be most effective for reducing regional scale ozone transport.[82] Table 2 below shows California emissions in 2011 and 2023 by sector and percentage.

Table 2: California Emissions in 2021 and 2023 by Sector and Percentage

| Modeled Emissions by Sector | $NO_X$ | | | VOCs | | |
|---|---|---|---|---|---|---|
| | Mobile | Stationary | Area | Mobile | Stationary | Area |
| % of 2011 NEI Emissions | 78.4% | 11.2% | 10.4% | 34.8% | 6.5% | 58.7% |
| % of 2023 Projected Emissions | 67.1% | 26.9% | 6.0% | 28.6% | 29.3% | 42.1% |

Source: California's 2018 Submittal, p. A4-46, Table 31.

CARB noted that a $NO_X$-focused approach is consistent with the EPA's historical focus for transport control measures, then summarized its controls for mobile sources, stationary sources, and consumer products.[83]

CARB summarized its $NO_X$ controls for mobile sources, including the Smog Check program, low emission vehicle fleet standards and zero emission vehicle regulation, and California's reformulated gasoline standard. CARB also described programs to reduce $NO_X$

[80] Id.
[81] Id. at A4-45.
[82] Id. at A4-46.
[83] Id. at A4-46-A4-56.

emissions from heavy-duty vehicles by nearly 70 percent by 2023 and from off-road equipment by 45 percent by 2031. In the South Coast Air Quality Management District, CARB stated that mobile source control programs are projected to reduce $NO_X$ emissions by 153 tons per day (tpd) in 2023 and by 184 tpd by 2031. CARB also noted that the federal government has primary regulatory authority over mobile sources such as ocean-going vessels, aircraft, and locomotives.[84]

CARB also described $NO_X$ controls for stationary sources, noting that California's 35 air districts have primary authority over those sources. CARB provided examples of prohibitory rules for $NO_X$ and VOC already approved into the California SIP. These included rules controlling VOC emissions from Graphic Arts Operations in the Ventura County Air Pollution Control District (APCD), Placer County APCD, and San Diego County APCD. Other examples included rules controlling $NO_X$ emissions from Natural Gas-Fired Fan-Type Central Furnaces and Small Water Heaters in Santa Barbara APCD, from Gasoline Transfer and Dispensing in the South Coast Air Quality Management District, from Natural Gas-Fired Water Heaters, Small Boilers, and Process Heaters in Placer County APCD, and from Large Water Heaters and Small Boilers in Ventura County APCD. Separately, CARB described California's consumer product control program to regulate reactive organic gas emissions, a subset of VOCs.[85]

After summarizing these controls, CARB provided information about its electric generating units (EGUs) and non-EGU stationary sources.[86] Noting that the EPA has historically targeted EGUs for reductions in ozone transport pollution, CARB stated that the only two EGUs in the state emitting $NO_X$ at rates higher than 0.061 lb/MMBtu are either "unlikely" to have further cost-effective emission control opportunities or planned to retire by the end of 2019.[87] CARB also explained that the only EGU emitting more than 250 tpy $NO_X$ in 2011 ceased

[84] Id. at A4-47-A4-48.
[85] Id. at A4-48-A4-53.
[86] Id. at A4-54-A4-55.
[87] Id. at A4-54.

operation in 2014, and that two EGUs emitting over 100 tpy $NO_X$ in the San Joaquin Valley APCD ceased operation in 2011.[88]

CARB also noted that in 2016, the EPA assessed further $NO_X$ reductions from EGUs and that the CSAPR Update resulted in a cost threshold of $1400 per ton.[89] CARB stated that the EPA's analysis showed ozone season EGU $NO_X$ reductions in California would not occur until the $5000 per ton emissions-control scenario.[90] CARB concluded that due to "strict and comprehensive emissions regulations on emissions, EGUs do not appreciably contribute to $NO_X$ such that the emissions could significantly contribute to ozone formation in another state."[91]

For non-EGUs, CARB noted that, although they emitted 6.7 times as much $NO_X$ as EGUs did in 2011 in California, they only represented 5.2 percent of the statewide $NO_X$ inventory.[92] CARB concluded that, for the large non-EGU sources that are either subject to $NO_X$ control measures that have not been submitted for approval into the California SIP, or fall outside the geographic jurisdiction of the applicable district rules, further emission controls would be unlikely to reduce any potential impact on downwind states' air quality because such sources comprise no more than 0.8 percent of the total $NO_X$ emitted in California in 2011.[93] CARB also highlighted its consumer product control program, which regulates reactive organic gas.[94]

CARB's Step 3 conclusion was that "the State's emission reduction control system leads the nation in stringency for most sectors of emission sources" and that "California's emission reduction programs adequately prohibit the emission of air pollutants in amounts that will significantly contribute to nonattainment, or interfere with maintenance, of the 0.070 ppm 8-hour ozone standard in any downwind state."[95]

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[88] Id. at A4-54-A4-55.
[89] Id. at A4-55.
[90] Id.
[91] Id.
[92] Id.
[93] Id., p. A4-55
[94] Id. at A4-56.
[95] Id., p. A4-57

C. Information Provided at Step 4

For its Step 4 analysis, CARB stated, "Although linked to other western states with projected air quality problems in 2023, California is not significantly contributing to nonattainment or maintenance problems in any other states. This is in large part due to the stringency of California's air pollution control program. Therefore, no further reductions or measures are necessary for Good Neighbor SIP purposes."[96]

CARB then provided a weight of evidence (WOE) analysis. The WOE analysis purported to "describe the U.S. EPA's contribution modeling when grouping upwind states' contributions," asserted that transport relationships among eastern and western states are different, and argued that the role of interstate transport in western states is a very small portion of projected design values and that the collective impact of all upwind states is also a small portion.[97] CARB also asserted that previous rounds of EPA's photochemical modeling identified smaller collective contribution for western states than eastern states.[98]

CARB's WOE analysis further described differences it claims exist between transport in eastern and western states.[99] Differences asserted by CARB included large populations in eastern states, the relatively small size of eastern states and consequent high population density, and numerous metropolitan areas in eastern states that cross state boundaries. CARB also noted the complex topography in western states, which presents a challenge to air quality modeling, as well as the relative distances between nonattainment areas and emissions sources in western states and the larger overall sizes of western states compared to eastern states.[100]

CARB continued its WOE analysis by reiterating that California has little impact on ozone levels outside its borders, specifically because of the distance between California's eastern border and its emissions sources, as well as because of the Sierra Nevada mountains, which limit

[96] Id.
[97] Id. at A4-58-A4-69.
[98] Id. at A4-59.
[99] Id. at A4-61-A4-67.
[100] Id. at A4-63.

airflow from California to the east and which are sparsely populated.[101] CARB's WOE analysis concluded with a per-capita $NO_X$ emissions comparison across the states, in which California ranked nearly last (even though it ranked second highest in total $NO_X$ emissions (after Texas)), and stated, "U.S. EPA's modeling of state contributions bears out the expectation that California's impacts on other states would be very small."[102]

In summary, California's 2018 submittal concluded that, while California is linked to receptors in Arizona and Colorado with projected air quality problems in 2023, California is not significantly contributing to nonattainment or maintenance problems in any other states.[103] Further, CARB asserted that its emissions reduction programs adequately prohibit the emission of air pollutants for transport purposes, and that California has already adopted and implemented permanent and enforceable measures of sufficient stringency to ensure that the state does not contribute significantly to ozone nonattainment or maintenance problems in downwind states.[104]

**III. EPA Evaluation**

The EPA is proposing to find that California's 2018 SIP Submittal does not meet the State's obligations with respect to prohibiting emissions that contribute significantly to nonattainment or interfere with maintenance of the 2015 8-hour ozone NAAQS in any other state based on the EPA's evaluation of the SIP submission using the 4-step interstate transport framework, and the EPA is therefore proposing to disapprove California's 2018 SIP Submittal.

A. Evaluation of California Weight of Evidence Analysis

As an initial matter, the EPA will address CARB's "WOE analysis" that included the statement: "[b]y not promulgating a version of the CSAPR in the West, U.S. EPA could be viewed as tacitly acknowledging a disparity in the significance of interstate transport of ozone between western and eastern states."[105] That is an incorrect interpretation. The EPA took

[101] Id. at A4-67-A4-69.
[102] Id. at A4-68.
[103] Id. at A4-72-A4-73.
[104] Id. at A4-73-A4-74.
[105] Id. at A4-62.

comment on including western states in the CSAPR Update, but did not finalize due to the possibility that "there may be additional factors to consider in the EPA's and state's evaluations" such as unspecified "geographically specific factors[.]"[106] The EPA stated explicitly that even though no western state was included in the CSAPR Update, "western states are not relieved of their statutory obligation to address interstate transport under the [CAA] section 110(a)(2)(d)(i)(I)" and that the "EPA and western states, working together, are continuing to evaluate interstate transport obligations on a case-by-case basis."[107]

While the EPA has in limited circumstances found unique issues associated with addressing ozone transport in western states, the EPA has consistently applied the 4-step transport framework in western states and has identified ozone transport problems in the west that are similar to those in the east.[108] For example, in a prior action addressing California's interstate transport obligations for the 2008 ozone NAAQS, the EPA concluded that "the collective contribution of emissions from upwind states represent a considerable portion of the ozone concentrations at the maintenance receptors in the Denver area."[109] Similarly, the EPA's view in acting on Wyoming and Utah's 2008 ozone NAAQS SIP submittals was that "the air quality problem in [the Denver nonattainment area of Colorado] resulted in part from the relatively small individual contribution of upwind states that collectively contribute a larger portion of the ozone contributions (9.7 percent), comparable to some eastern receptors . . . ."[110]

The remaining discussion in CARB's WOE analysis is of limited relevance to the question of assessing interstate ozone transport. CARB's description of western geography, settlement patterns, early American expansionist policy, and historically low population density

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[106] 81 FR 74503, 74523.
[107] Id.
[108] See 81 FR 31513 (May 19, 2016) (Arizona); 83 FR 65093 (December 19, 2018) (California); 85 FR 26361 (May 4, 2020) (New Mexico); 81 FR 71991 (Oct. 19, 2016) (Utah prong 2); 82 FR 9155 (February 3, 2017) (Utah prong 1); 84 FR 14270 (April 10, 2019) (Wyoming).
[109] 83 FR 5381 (February 7, 2018). See also 82 FR 9155, 9157 (February 3, 2017).
[110] See 84 FR 3389, 3391 (Feb. 12, 2019). See also 81 FR 71991, 71994-95 (Oct. 19, 2016); 81 FR 28807, 28810 (May 10, 2016) (Colorado receptors are impacted by interstate transport where total upwind state contribution is 11 percent of the total ozone concentration and five states were projected to be linked).

do not overcome the fundamental conclusion from each successive round of EPA modeling, discussed below: California contributes more than 1 percent of the 2015 ozone NAAQS to multiple nonattainment and/or maintenance receptors in other states. As explained in further detail below, the EPA has examined the reliability of its nationwide modeling for characterizing ozone transport in the west and finds that the modeling is reliable. The remainder of CARB's analysis at Steps 3 and 4 is not approvable. CARB did not adequately evaluate additional emissions control opportunities to support its conclusion that emissions from sources in California do not significantly contribute to nonattainment or interfere with maintenance in other States. The EPA acknowledges that California may have one of, if not the, most stringent emissions control strategies in the country, but the state remains obligated to analyze additional control opportunities once a linkage has been established at Steps 1 and 2. Finally, while the EPA approved California's transport SIP submittal for the 2008 ozone NAAQS at Step 3 on the basis that the State's emissions were overall relatively well-controlled, the EPA cannot reach the same conclusion here for the more stringent 2015 ozone NAAQS. In particular, the EPA finds persistent linkages between California and several out of state receptors under the more stringent NAAQS. Further, the EPA finds based on new modeling, see Section III.B. of this document, that the State failed to adequately assess emissions control opportunities at certain non-EGU facilities.

B. Evaluation of Information provided by California regarding Step 1 and 2

1. Different Versions of EPA Modeling and Regulatory Flexibility

At Step 1 and 2 of the 4-step interstate transport framework, CARB assessed the EPA modeling released with the January 2017 NODA and the October 2017 memorandum, noting they yielded the same design values to identify nonattainment and maintenance receptors in Colorado and Arizona in 2023.[111] CARB used the EPA's modeling released with the January 2017 NODA and the March 2018 memorandum to identify California's contributions to

[111] Id. at A4-11 and Table 1.

receptors in Colorado and Arizona, and decided to give more weight to the contribution modeling released with the March 2018 memorandum (which was based on the "en" emissions inventory).[112,113] With regard to the Arizona receptors, CARB compared different versions of the EPA's modeling and noted that California's contribution decreased from the earlier to later modeling versions, while Arizona's own emissions increased. Ultimately, CARB chose to rely on the version of the EPA modeling that identified 2 receptors in Arizona, as well as contributions from California to those receptors above 1 percent of the NAAQS.[114] CARB acknowledged that California is linked to downwind air quality problems in Arizona above the 1 percent of the NAAQS threshold at Step 2.[115]

With regard to receptors in Colorado, CARB likewise compared different versions of the EPA's modeling. Additionally, however, CARB attempted to rely on a potential "flexibility" identified in Attachment A to the March 2018 memorandum to exclude exceptional events flagged by Colorado in its Denver Metro/North Front Range attainment SIP submittal for the 2008 ozone NAAQS to revise base year design values. This analysis led CARB to conclude that there will be fewer receptors in Colorado in 2023 than under either the EPA's modeled design values released with the January 2017 NODA or the October 2017 memorandum: zero nonattainment or maintenance receptors using the January 2017 NODA version of EPA's modeling and the "el" emissions inventory, and zero nonattainment and four maintenance receptors using the October 2017 memorandum version of EPA's modeling and the "en" emissions inventory.

Nonetheless, CARB's analysis did not conclude that California was not linked below 1 percent of the NAAQS to the four maintenance sites it identified in Colorado. On the contrary,

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[112] Id. at A4-33. A4-34, A4-36.
[113] As explained in Section I, the October 2017 memorandum provided projected ozone design values for 2023. The data released in the March 2018 memorandum built off the information provided in the October 2017 memorandum by including contribution data to assist states in the development of their interstate transport SIPs for the 2015 ozone NAAQS.
[114] Id. at A4-44.
[115] Id.

CARB acknowledged that it chose to rely on the EPA modeling released with the October 2017 memorandum (using the "en" emissions inventory) and that California was linked to four maintenance receptors in Colorado using that version of the modeling, even after CARB removed flagged data.[116]

As explained in Section I.D. above, the concepts presented in Attachment A to the March 2018 memorandum were neither guidance nor determined by the EPA to be consistent with the CAA. The EPA made clear at the time that it would thoroughly review the technical and legal justifications states put forward in relying on any concepts from Attachment A to the March 2018 memorandum. In this case, what CARB proposes is potentially consistent with the EPA's modeling guidance, insofar as the EPA has recognized that it may be appropriate to exclude certain flagged data associated with atypical events (e.g., wildfires) when calculating base period design values to project to a future year. However, CARB's removal of atypical data did not change its conclusion that there are receptors in Colorado in 2023 and that California contributes above 1 percent of the NAAQS to one or more of them.[117]

2. Wildfires

In response to California's claim that recorded violations at projected receptors in both Colorado and Arizona are heavily influenced by wildfires experienced in western states, the EPA acknowledges that wildfires could influence downwind pollutant concentrations and that it is likely that wildfires would occur in 2023 and future years. However, there is no way to accurately forecast the timing, location, and extent of fires across a future three-year period that would be used to calculate ozone design values. In the EPA's CSAPR Update Modeling provided in the March 2018 memorandum and in the EPA's 2016v2 emissions platform based modeling, the EPA held the meteorological data and the fire and biogenic emissions constant at

[116] A4-33, A4-34.
[117] Id. at A4-44.

base year levels in the future year modeling, as those emissions are highly-correlated with the meteorological conditions in the base year.

CARB's analysis focused on changes in air quality projections at receptors after removing data associated with atypical events (e.g., wildfires) and questioned whether the number of receptors would be diminished or be nonexistent by 2023 if those data were removed. However, we note that measured design values at the identified Colorado and Arizona receptors continue to have design values well in excess of the 2015 ozone NAAQS, as shown in Tables 3 and 4 below.[118]

**Table 3: Ozone Design Values for Denver Nonattainment Area Monitors[119]**

| AQS Site ID | State | County | 2014-2016 Design Value (ppb) | 2015-2017 Design Value (ppb) | 2016-2018 Design Value (ppb) | 2017-2019 Design Value (ppb) | 2018-2020 Design Value (ppb) |
|---|---|---|---|---|---|---|---|
| 80013001 | Colorado | Adams | 67 | 67 | 67 | 65 | 69 |
| 80050002 | Colorado | Arapahoe | | | 73 | 74 | 77 |
| 80050006 | Colorado | Arapahoe | 67 | 67 | 69 | 69 | 71 |
| 80310002 | Colorado | Denver | 66 | 68 | 69 | 68 | 70 |
| 80350004 | Colorado | Douglas | 77 | 77 | 78 | 78 | 81 |
| 80590005 | Colorado | Jefferson | 72 | 75 | 72 | 71 | 71 |
| 80590006 | Colorado | Jefferson | 77 | 77 | 78 | 76 | 79 |
| 80590011 | Colorado | Jefferson | 80 | 79 | 79 | 76 | 80 |
| 80690007 | Colorado | Larimer | 69 | 68 | 70 | 68 | 70 |
| 80690011 | Colorado | Larimer | 75 | 75 | 77 | 75 | 75 |
| 80691004 | Colorado | Larimer | 70 | 68 | 69 | 67 | 67 |

**Table 4: Ozone Design Values for Selected Arizona Monitors[120,121]**

| AQS Site ID | State | County | 2014-2016 Design Value | 2015-2017 | 2016-2018 | 2017-2019 | 2018-2020 |
|---|---|---|---|---|---|---|---|

[118] In addition, the EPA's most recent modeling identifies receptors in 2023 in Utah, Nevada, and on tribal lands. Yuma, Arizona is also identified as a receptor in EPA's most recent modeling, while the Phoenix area no longer has receptors and now has a longer timeframe for attainment due to proposed changes in nonattainment classification. Projections for receptors that the EPA's most recent modeling identifies are provided later in this notice in Table 5.

[119] Historic design values at individual monitoring sites nationwide are provided in the file: 2010-2020 Design Values.xlsx which is included in docket ID No. EPA-HQ-OAR-2021-0663. Design value reports can also be obtained on EPA's website at *https://www.epa.gov/air-trends/air-quality-design-values*.

[120] Design values obtained from *https://www.epa.gov/air-trends/air-quality-design-values,* April 21, 2022.

[121] CARB presented data for these two Maricopa County monitors in its submittal. Those monitors are no longer projected to be receptors in the EPA's most recent modeling. However, Yuma, Arizona, along with monitors in Utah, Nevada, and on tribal land, as described in Table 5 of this notice, are still projected to be receptors.

| | | | (ppb) | Design Value (ppb) | Design Value (ppb) | Design Value (ppb) | Design Value (ppb)[b] |
|---|---|---|---|---|---|---|---|
| 04–013–0019 | Arizona | Maricopa | 73 | 74 | 74 | 73 | 74 |
| 04–013–1004 | Arizona | Maricopa | 75 | 75 | 76 | 75 | 78 |
| 40278011 | Arizona | Yuma | 74 | 72 | 71 | 71 | 68 |

While elevated ozone levels in some instances may be associated with wildfires or other atypical events, presently neither Arizona or Colorado have sought, nor has the EPA concurred on, exceptional events demonstrations that would indicate official design values at these monitors should be appreciably lower than presently reported.

3. Back Trajectory Analysis

For both Colorado and Arizona, CARB analyzed HYSPLIT back trajectories, but these also did not affect CARB's conclusions regarding California's linkages to downwind monitors. HYSPLIT back trajectory analyses use archived meteorological modeling that includes actual observed data (surface, upper air, airplane data, etc.) and modeled meteorological fields to estimate the most likely route of an air parcel transported to a receptor at a specified time. The method essentially follows a parcel of air backward in hourly steps for a specified length of time. HYSPLIT estimates the central path in both the vertical and horizontal planes. The HYSPLIT central path represents the centerline with the understanding that there are areas on each side horizontally and vertically that also contribute to the concentrations at the end point. The horizontal and vertical areas that potentially contribute to concentrations at the endpoint grow wider from the centerline the further back in time the trajectory goes. Therefore, a HYSPLIT centerline does not have to pass directly over emissions sources or emission source areas but merely relatively near emission source areas for those areas to contribute to concentrations at the trajectory endpoint. The EPA relies on back trajectory analysis as a corollary analysis along with observation-based meteorological wind fields at multiple heights to examine the general plausibility of the photochemical model "linkages." Because the back trajectory calculations do

not account for any air pollution formation, dispersion, transformation, or removal processes as influenced by emissions, chemistry, deposition, etc., the trajectories cannot be used to develop quantitative contributions. Therefore, back trajectories cannot be used to quantitatively evaluate the magnitude of the existing photochemical contributions from upwind states to downwind receptors. In this regard, photochemical modeling simulations for ozone interstate transport assessments are relied upon by the EPA to simulate the formation and fate of oxidant precursors, primary and secondary particulate matter concentrations, and deposition over regional and urban spatial scales. Photochemical modeling is the most sophisticated tool available to estimate future ozone levels and contributions to those modeled future ozone levels. Consideration of the different processes that affect primary and secondary pollutants at the regional scale in different locations is fundamental to understanding and assessing the effects of emissions on air quality concentrations.

CARB's HYSPLIT back trajectory analysis showed that on high ozone days in Colorado at the receptors identified by the EPA in the March 2018 memorandum "only one backward and forward trajectory pairing indicated that emissions in the California mixed layer should have reached the mixed layer at a Colorado receptor site." CARB claims this suggests that "the complexity of the physical environment between California and Colorado limits the reproducibility of modeled transport and that considerable multi-faceted analyses would be necessary to explore transport mechanisms through areas of complex terrain."[122] For Arizona, CARB concluded that "[o]nly a few trajectories extend from California" to the Phoenix area.[123] CARB's trajectory analysis confirmed that California is an upwind area for the receptors in Colorado and Arizona often enough to potentially contribute to nonattainment or interfere with maintenance. The analysis did not provide evidence that was contrary to the conclusions of the

[122] Id. at A4-18, A4-34.
[123] Id. at A4-39, A4-40 Figure 5.

EPA's photochemical modeling analyses (i.e., the EPA's modeling results in the March 2018 memorandum and EPA 2016v2 model).

Further, the EPA finds CARB's back trajectory analysis to be deficient in proving that California does not contribute significantly to nonattainment or maintenance at the monitors in Colorado that the State was linked to in the EPA's modeling results in the March 2018 memorandum. CARB's back trajectory analysis for Colorado shows a linkage between California and the monitors when evaluating three altitudes: 10 meters, 1,000 meters, and 2,000 meters, during June and July, when most exceedances occurred at these sites. By only evaluating these altitudes, CARB neglects to consider the wide range of heights that might show back trajectories leading back to sources in California, which could potentially further tie the state to more ozone exceedance events. In addition, by excluding trajectories with a centerline above the mixed layer the analysis fails to consider transported pollutants at elevations below the centerline which may be in the mixed layer and therefore impact ground level ozone concentrations.

Similarly for its analysis of Arizona linkages, CARB's back trajectory analysis shows a linkage between California and the monitors when evaluating three altitudes: 100 meters, 500 meters, and 1,000 meters on ozone exceedance days in 2015 and 2016. CARB's back trajectories for Arizona use a relatively short 24-hour time period, which limits their reliability for evaluating long-distance transport of emissions. As evident from Figure 5 in CARB's SIP submission, there were a number of exceedance days in Phoenix with 24-hour back trajectories that point westward toward California. These trajectories may have crossed portions of California if the trajectories were calculated for a longer time period, such as 48 hours. This would further strengthen the linkage to California that is already indicated by CARB's analysis.

In California's 2018 submittal, CARB noted that projected 2023 DVs in Denver and Phoenix increased from the "el" modeling released in the January 2017 NODA and the "en" modeling released in the October 2017 memorandum. For Denver, CARB noted that there were three 2023 receptors, all maintenance-only, based on the "el" modeling, whereas with the "en" modeling projected three monitors to be nonattainment and three monitors to be maintenance-

only. For Phoenix, CARB noted that there were no receptors projected for 2023 based on the "el" modeling, whereas with the "en" modeling, two monitors are projected to be maintenance-only. Based on an analysis of the change in "home state" emissions and contributions vs contributions and emissions from California in the "el" modeling vs the "en" modeling, CARB argues that the nonattainment and maintenance receptors found in the "en" modeling in Denver and Phoenix are due to increases in emissions in the "home state" rather than contributions from California.

With respect to the information California provided that is related to local emissions and the impact on air quality at the Denver nonattainment area receptors, this information is insufficient to approve California's 2018 SIP submittal. As an initial matter, we do not agree with CARB's conclusions that the remaining nonattainment or maintenance problems in Arizona or in Colorado (after accounting for flagged data) should be ascribed solely to an increase in local emissions in the home state. While CARB asserts that its relative contribution to the problems has declined, CARB does not establish with any quantitative evidence that this contribution drops below 1 percent of the NAAQS.

More fundamentally, regardless of whether local emissions are the largest contributor to a specific nonattainment or maintenance receptor, the good neighbor provision requires that upwind states prohibit emissions that contribute significantly to nonattainment or interfere with maintenance of the NAAQS in downwind states. The EPA evaluates a state's obligations to eliminate interstate transport emissions under the interstate transport provision according to the EPA's 4-step process, and the EPA's updated modeling at Steps 1 and 2 has identified a linkage between emission from California sources and downwind nonattainment and maintenance receptors.

Further, the EPA disagrees with the implication that local emissions reductions from the jurisdiction where the downwind receptor is located must first be implemented and accounted for before imposing obligations on upwind states under the interstate transport provision. There is nothing in the CAA that supports that position, and it does not provide grounds on which to

approve California's 2018 SIP submittal. The D.C. Circuit has held on five different occasions that the timing framework for addressing interstate transport obligations must be consistent with the downwind areas' attainment schedule. In particular, for the ozone NAAQS, the states and the EPA are to address interstate transport obligations "as expeditiously as practicable" and no later than the attainment schedule set in accordance with CAA section 181(a). See *North Carolina*, 531 F.3d at 911-13; *Wisconsin*, 938 F.3d at 313-20; *Maryland*, 958 F.3d at 1204; *New York v. EPA*, 964 F.3d 1214, 1226 (D.C. Cir. 2020); *New York v. EPA*, 781 Fed. App'x 4, 6-7 (D.C. Cir. 2019). The court in *Wisconsin* explained its reasoning in part by noting that downwind jurisdictions often may need to heavily rely on emissions reductions from upwind states in order to achieve attainment of the NAAQS, 938 F.3d at 316-17; such states would face increased regulatory burdens including the risk of bumping up to a higher nonattainment classification if attainment is not reached by the relevant deadline. *Maryland*, 958 F.3d at 1204. The statutory framework of the CAA and these cases establish clearly that states and the EPA must address interstate transport obligations in line with the attainment schedule provided in the Act in order to timely assist downwind states in attaining and maintain the NAAQS, and this schedule is "central to the regulatory scheme." *Wisconsin*, 938 F.3d at 316 (quoting *Sierra Club v. EPA*, 294 F.3d 155, 161 (D.C. Cir. 2002)).

Additionally, the 2018 SIP submittal does not assess whether California's own emissions contributed to nonattainment or interfered with maintenance at the linked receptors, or substantiate that emissions from California's sources were not interacting with these monitors. Consequently, the application of local emission reduction measures does not absolve upwind states and sources from the responsibility of addressing their significant contribution. Moreover, California still has an obligation under the Act to address its downwind contribution to ozone nonattainment or interference with maintenance regardless of the emission reduction potential for local control measures. Furthermore, given that the EPA's updated modeling indicates that California is linked to nonattainment and maintenance receptors at Step 2, the EPA disagrees

with CARB's claims regarding the application of local emission reduction measures with respect to its downwind linkages in the most recent modeling.

CARB presents a number of arguments that the unique topography and/or meteorology in the western region and, in particular, in and surrounding the Denver and Phoenix nonattainment areas support a conclusion that California does not significantly contribute or interfere with maintenance in those areas. For example, CARB argues that the mountainous topography in California traps ozone-precursors in-state, and that the Rocky Mountains in Colorado and the mountains around Phoenix, Arizona also form barriers to the transport of ozone pollution.[124] First, we note that despite these potential considerations, CARB itself acknowledges in its 2018 submittal that California is linked to at least some receptors in Colorado and Arizona at Step 2 based on the modeling analysis on which it primarily relies. Second, even if CARB intended these arguments to support an alternative argument that it is not linked to those receptors, the EPA finds that these entirely qualitative discussions are insufficient to overcome the robust, quantitative basis to find linkages exist based on the modeling.

We agree with CARB that the terrain in the western U.S. is complex. A complex topography can have a number of impacts on the transport of air and air pollutants, such as enhance vertical mixing of air, serve as a barrier to transported air pollution, enhance accumulation of local emissions in basins and valleys, and influence air flows up, down, and across valleys. While topography can have a significant effect on pollutant (e.g., ozone) formation and transport, it does not prevent transport within the State and beyond. Mountain passes through surrounding ranges can serve as "transport corridors" for ozone. For example, in Southern California, areas where upwind pollution is funneled through valley topography experience some of the highest measured ozone concentrations, despite lower local emissions.

In Southern California there are several examples of transport corridors that funnel ozone and ozone precursors. The Riverside County (Coachella) 2015 8-hour ozone NAAQS design

[124] See, e.g., A4-13-14.

value for 2020 was 88 ppb. The area is affected by transported emissions from the South Coast Air Basin through the San Gorgonio Pass.[125] Similarly, the Kern County (Eastern Kern), CA 2015 8-hour ozone NAAQS design value for 2020 was 86 ppb and is primarily influenced by emissions transported from the San Joaquin Valley through the Tehachapi Pass.[126,127] Ozone and its precursors can be transported into the southern Mojave Desert Air Basin from the greater Los Angeles Air Basin through the Cajon Pass. Ozone can also be transported eastward to the Salton Sea Air Basin through the San Gorgonio Pass and from the San Diego Air Basin through other mountain passes continuing into Arizona. In addition to transport within the mixed layer, orographic lifting of ozone from the surface to the free troposphere by the so called "mountain chimney effect" is a potential additional pathway for venting of pollutants into the free troposphere and making them available for long-range transport to downwind states (Langford et.al, 2010 and Li et al., 2015).[128,129] While Southern California offers evidence of funneling of pollution through mountain passes and upwelling of pollution into troposphere, we have no reason to conclude these effects could not occur in the Sierra Nevada Mountains and the Denver Metro/North Front Range.

The EPA has previously explained that its nationwide photochemical grid modeling is reliable for applications in the western region of the U.S. In disapproving Utah's 2008 ozone transport SIP submittal for prong 2, the EPA rejected comments that its CAMx modeling (the same modeling software used here) did not account for unique western geographical considerations. See 81 FR 71991, 71992-93 (Oct. 19, 2016). In particular, the EPA noted that the

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[125] Final 2016 Air Quality Management Plan, at 7-23, South Coast Air Quality Management District, March 2017
[126] Historic design values at individual monitoring sites nationwide are provided in the file: 2010-2020 Design Values.xlsx that is included in docket ID No. EPA-HQ-OAR-2021-0663. Design value reports can also be obtained on EPA's website at *https://www.epa.gov/air-trends/air-quality-design-values*.
[127] See "CALIFORNIA Final Area Designations for the 2015 Ozone National Ambient Air Quality Standards Technical Support Document (TSD)" at pg 67, 178; available in docket ID No. EPA–HQ–OAR–2017–0548 (83 FR 25776, April 30, 2018). Also available on EPA's website at *https://www.epa.gov/sites/default/files/2018-05/documents/ca_tsd_combined_final_0.pdf.*
[128] Langford, A., Senff, C., Alvarez, R., Banta, R., Hardesty, R.: Long-range transport of ozone from the Los Angeles Basin: A case study, J. Geophys. Res., 37, L06807, doi:10.1029/2010GL042507.
[129] Li, J., Georgescu, M., Hyde, P., Mahalov, A., and Moustaoui, M.: Regional-scale transport of air pollutants: impacts of Southern California emissions on Phoenix ground-level ozone concentrations, Atmos. Chem. Phys., 15, 9345–9360, https://doi.org/10.5194/acp-15-9345-2015, 2015.

modeling accounted for differences in emissions (including wildfires), meteorology, and topography" across all regions of the U.S. *Id.* at 71993. The EPA found that neither the commenters, nor the state in its SIP submittal, had adduced any additional factors that would be relevant for projecting ozone concentrations in the west that were not already factored into and documented in both the modeling itself and in the EPA's technical support documents explaining that modeling. *Id.* The same holds true here. As explained in Appendix A of the Air Quality Modeling TSD included in docket ID No. EPA-HQ-OAR-2021-0663, the EPA has found that its updated 2016v2 emissions platform-based modeling performs equally as well in eastern and western regions in terms of replicating the relative magnitude of concentrations and day-to-day variability that are characteristic of observed 8-hour daily maximum ozone concentrations in each region. It is also important to note that the model accurately captures substantial geographical difference in the temporal nature of ozone concentrations at the receptors in the west, including in the Denver nonattainment area, compared to receptors in the East.[130] The EPA continues to find its modeling reliable for characterizing ozone concentrations and contribution values in the western region of the United States. As such, CARB's qualitative discussions of western geography fail to present evidence that calls into question the results of the EPA's photochemical grid modeling.

C. Results of the EPA's Step 1 and Step 2 Modeling and Findings for California

As described in section I, the EPA performed air quality modeling using the 2016v2 emissions platform to project design values and contributions for 2023. These data were examined to determine if California contributes at or above the threshold of 1 percent of the 2015 8-hour ozone NAAQS (0.70 ppb) to any downwind nonattainment or maintenance receptor. As shown in Table 3, the data[131] indicate that in 2023, emissions from California contribute greater

[130] See Appendix A – Model Performance Evaluation for 2016v2 Base Year CAMx Simulation, of Air Quality Modeling TSD for 2015 Ozone NAAQS Transport SIP Proposed Actions, at A-10.
[131] Design values and contributions at individual monitoring sites nationwide are provide in the file: 2016v2_DVs_state_contributions.xlsx which is included in docket ID No. EPA-HQ-OAR-2021-0663.

than 1 percent of the standard (i.e., 0.70 ppb) to nonattainment or maintenance-only receptors in Arizona, Colorado, Nevada, and Utah.[132] Emissions from California also contribute greater than 1 percent of the standard to nonattainment receptors on, or representative of, the Morongo and Pechanga reservations.[133]

Therefore, based on the EPA's evaluation of the information submitted by California, and based on the EPA's most recent modeling results for 2023, the EPA proposes to find that California is linked at Steps 1 and 2 and has an obligation to assess potential emissions reductions from sources or other emissions activity at Step 3 of the 4-step framework.

Table 5: California Linkage Results Based on EPA Updated 2023 Modeling

| Receptor ID | Location | Nonattainment/ Maintenance | 2023 Average Design Value (ppb) | 2023 Maximum Design Value (ppb) | California Contribution (ppb) |
|---|---|---|---|---|---|
| 40278011 | Yuma (AZ) | Maintenance-only | 70.5 | 72.2 | 5.09 |
| 80350004 | Denver/Chatfield (CO) | Nonattainment | 71.7 | 72.3 | 0.91 |
| 80590006 | Rocky Flats (CO) | Nonattainment | 72.6 | 73.3 | 1.03 |
| 80590011 | Denver/NREL (CO) | Nonattainment | 73.8 | 74.4 | 1.17 |
| 320030075 | Las Vegas/Northwest (NV) | Maintenance-only | 70.0 | 71.0 | 7.44 |
| 490110004 | SLC/Bountiful (UT) | Nonattainment | 72.9 | 75.1 | 2.25 |

[132] These modeling results are consistent with the results of a prior round of 2023 modeling using the 2016v1 emissions platform which became available to the public in the fall of 2020 in the Revised CSAPR Update, as noted in Section I. That modeling showed that California had a maximum contribution greater than 0.70 ppb to at least one nonattainment or maintenance-only receptor in 2023. These modeling results are included in the file "Ozone Design Values and Contributions Revised CSAPR Update.xlsx" in docket EPA-HQ-OAR-2021-0663.

[133] We note that, consistent with the EPA's prior good neighbor actions in California, the regulatory ozone monitor located on the Morongo Band of Mission Indians ("Morongo") reservation is a projected downwind receptor in 2023. See monitoring site 060651016 in Table 3. We also note that the Temecula, California regulatory ozone monitor is a projected downwind receptor in 2023 and in past regulatory actions has been deemed representative of air quality on the Pechanga Band of Luiseño Indians ("Pechanga") reservation. See, e.g., Approval of Tribal Implementation Plan and Designation of Air Quality Planning Area; Pechanga Band of Luiseño Mission Indians, 80 FR 18120, at 18121-18123 (April 3, 2015); see also monitoring site 060650016 in Table 3. The presence of receptors on, or representative of, the Morongo and Pechanga reservations does not trigger obligations for the Morongo and Pechanga Tribes. Nevertheless, these receptors are relevant to the EPA's assessment of any linked upwind states' good neighbor obligations. See, e.g., Approval and Promulgation of Air Quality State Implementation Plans; California; Interstate Transport Requirements for Ozone, Fine Particulate Matter, and Sulfur Dioxide, 83 FR 65093 (December 19, 2018). Under 40 CFR 49.4(a), tribes are not subject to the specific plan submittal and implementation deadlines for NAAQS-related requirements, including deadlines for submittal of plans addressing transport impacts.

| | | | | | |
|---|---|---|---|---|---|
| 490353006 | SLC/Hawthorne (UT) | Nonattainment | 73.6 | 75.3 | 2.46 |
| 490353013 | SLC/Herriman (UT) | Nonattainment | 74.4 | 74.9 | 1.42 |
| 490570002 | SLC/Ogden (UT) | Maintenance-only | 70.6 | 72.5 | 2.24 |
| 490571003 | SLC/Harrisonville (UT) | Maintenance-only | 70.5 | 71.5 | 2.16 |
| 060651016 | Morongo Band of Mission Indians | Nonattainment | 89.8 | 90.9 | 34.24 |
| 060650016 | Pechanga Band of Mission Indians (represented by Temecula (CA)) | Nonattainment | 72.0 | 72.9 | 26.32 |

Based on the EPA's evaluation of the information provided in California's 2018 submittal and based on the results of the EPA's 2016v2 emissions platform modeling, the EPA will proceed to evaluate these additional arguments at Step 3 of the 4-step interstate transport framework.

D. Evaluation of Information Provided Regarding Step 3

At Step 3 of the 4-step interstate transport framework, a state's emissions are further evaluated, in light of multiple factors, including air quality and cost considerations, to determine what, if any, emissions significantly contribute to nonattainment or interfere with maintenance and, thus, must be eliminated under CAA section 110(a)(2)(D)(i)(I).

To effectively evaluate which emissions in the state should be deemed "significant" and therefore prohibited, states generally should prepare an accounting of sources and other emissions activity for relevant pollutants and assess potential, additional emissions reduction opportunities and resulting downwind air quality improvements. The EPA has consistently applied this general approach (i.e., Step 3 of the 4-step interstate transport framework) when identifying emissions contributions that the Agency has determined to be "significant" (or interferes with maintenance) in each of its prior federal, regional ozone transport rulemakings, and this interpretation of the statute has been upheld by the Supreme Court. See *EME Homer City*, 572 U.S. 489, 519 (2014). While the EPA has not directed states that they must conduct a Step 3 analysis in precisely the manner the EPA has done in its prior regional transport

rulemakings, state implementation plans addressing the obligations in CAA section 110(a)(2)(D)(i)(I) must prohibit "any source or other type of emissions activity within the State" from emitting air pollutants which will contribute significantly to downwind air quality problems. Thus, states must complete something similar to the EPA's analysis (or an alternative approach to defining "significance" that comports with the statute's objectives) to determine whether and to what degree emissions from a state should be "prohibited" to eliminate emissions that will "contribute significantly to nonattainment in, or interfere with maintenance of" the NAAQS in any other state. California did not conduct such an analysis in its 2018 SIP Submittal.

As previously indicated in section II.B. California's 2018 SIP Submittal provided an overview of $NO_X$ emissions by sector for 2011 NEI emissions and 2023 projections. CARB also provided a summary of regulations controlling $NO_X$ and VOCs at the state and district level for various sectors, many of which had been approved into California's SIP. CARB asserted in the 2018 Submittal that, despite its contributions, California had met its good neighbor obligations through the implementation and enforcement of stringent $NO_X$ and VOC control measures that go beyond the EPA's presumptive cost threshold in the CSAPR Update for highly cost-effective emissions reductions, and through the ongoing adoption and revision of additional control measures to further ensure the reduction of ozone in both California and downwind areas.

CARB, however, did not provide an adequate demonstration at Step 3 that California was adequately controlling its emissions for the purposes of the good neighbor provision for the 2015 ozone NAAQS, particularly because CARB acknowledged in its 2018 SIP Submittal that its emissions were linked to Arizona and Colorado receptors at Steps 1 and 2. In general, the air quality modeling that the EPA has conducted as well as the modeling relied on by CARB in its submittal already account for "on-the-books" emissions control measures. Both sets of modeling analyzed by CARB (confirmed by the EPA's most recent modeling) clearly establish continued linkages from California to downwind receptors in 2023 at Steps 1 and 2. In general, the listing of existing or on-the-way control measures, whether approved into the state's SIP or not, does

not substitute for a complete Step 3 analysis under the EPA's 4-Step framework to define "significant contribution."[134] CARB's submittal does not include an assessment of the overall effects of the identified control measures it identifies or explain what the overall resulting air quality effects would be at identified out-of-state receptors.

Further, CARB did not conduct in its submittal any analysis of potential additional emissions-reduction measures to further reduce its impact on the identified downwind receptors. For example, CARB did not include in the 2018 SIP Submittal an accounting of facilities in the State along with an analysis of potential $NO_X$ emissions control technologies, their associated costs, estimated emissions reductions, and downwind air quality improvements. Nor does the submittal include an analysis of whether such potential additional control technologies or measures could reduce the impact of California's emissions on out of state receptors. Though there is not a prescribed method for a Step 3 analysis, the EPA has consistently applied Step 3 of the good neighbor framework through a more rigorous evaluation of potential additional control technologies or measures than what was provided in the SIP submission. Identifying a range of various emissions controls measures that have been or may be enacted at the state or local level, without analysis of the impact of those measures on the out of state receptors, is not analytically sufficient.

CARB did not offer an explanation as to whether any more stringent emissions reductions that may be available were prohibitively costly or infeasible. CARB did note that the EPA's 2016 cost-effectiveness analysis of EGU emission reductions in the CSAPR Update for the 2008 ozone NAAQS found that $NO_X$ emission reductions at California EGUs would be achieved at a significantly higher cost threshold than the cost threshold finalized for the states ultimately included in the CSAPR Update. CARB further stated that what the "EPA found true with respect to the 0.075 ppm 8-hour ozone standard is equally valid concerning the 0.070 ppm

[134] See discussion further in this Section discussing why EPA finds its analysis in the approval of California's 2008 ozone NAAQS transport SIP to be appropriate or sufficient for purposes of this action.

8-hour ozone standard. California's emission reduction programs adequately prohibit the emission of air pollutants in amounts that will significantly contribute to nonattainment, or interfere with maintenance, of the 0.070 ppm 8-hour ozone standard in any downwind state."[135]

However, this is incorrect. There is no reason to suppose that the EPA or states should conclude that the same degree of emissions-control stringency that was deemed approvable to address good neighbor obligations to meet a less stringent NAAQS should apply to a more stringent NAAQS. While the EPA has not finalized a benchmark cost-effectiveness threshold for good neighbor obligations for the more stringent 2015 ozone NAAQS, it was not the EPA's obligation to do so prior to states developing their SIP submissions. [136] CARB, in its 2018 SIP Submittal, has not conducted an analysis to establish one for the EPA to evaluate, and this is grounds for disapproval.

More fundamentally, relying on the CSAPR Update's (or any other CAA program's) determination of cost-effectiveness without further Step 3 analysis is insufficient. Cost-effectiveness must be assessed in the context of the specific CAA program; assessing cost-effectiveness in the context of interstate ozone transport should reflect a more comprehensive evaluation of the nature of the interstate transport problem, the total emissions reductions available at several cost thresholds, and the air quality impacts of the reductions at downwind receptors. While the EPA has not finalized a benchmark cost-effectiveness value for the 2015 ozone NAAQS interstate transport obligations, because the 2015 ozone NAAQS is a more stringent and more protective air quality standard, it is reasonable to expect control measures or strategies to address interstate transport of ozone to reflect higher marginal control costs. As

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[135] Id. at A4-57.

[136] The EPA notes that it has proposed a cost-effectiveness threshold of $11,000 per ton for EGUs in determining good neighbor obligations for the 2015 ozone NAAQS after assessing the full range of $NO_X$ mitigation strategies that could be applied to fossil-fuel fired EGUs. "Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard" 87 FR 20036, 20091-93 (April 6, 2022). While this does not represent a final promulgated cost-effectiveness benchmark for EGUs that California is expected to have applied, the EPA's Step 3 analysis in the proposed FIP indicates the relative paucity of analysis in California's SIP submittal regarding emissions control opportunities at Step 3. Nonetheless, the EPA has not proposed to apply the EGU control strategy in its proposed FIP action to California. See id. at 20088. The EPA continues to find in this proposal that California's EGUs are sufficiently controlled for ozone-precursor emissions for purposes of good neighbor obligations under the 2015 ozone NAAQS.

such, the marginal cost threshold of $1,400 per ton for the CSAPR Update (which addresses the 2008 ozone NAAQS and is in 2011$) is not an appropriate cost threshold and cannot be approved as a benchmark to use for interstate transport SIP submissions for the 2015 ozone NAAQS.

Although the EPA acknowledges states are not necessarily bound to follow the EPA's own analytical framework at Step 3, CARB did not attempt to determine or justify an appropriate uniform cost-effectiveness threshold. This would have been similar to the approach to defining significant contribution that the EPA has applied in prior rulemakings such as CSAPR and the CSAPR Update, even if conducting precisely this type of analysis is not technically mandatory. For example, CARB did not conduct its own updated EGU analysis of all large $NO_X$ emitting EGUs. Nonetheless, the EPA finds based on its own analysis that additional emissions reductions are not required from EGUs to address California's good neighbor obligations for the 2015 ozone NAAQS.[137]

As stated in the SIP submittal, the Greenleaf One unit emits at higher rates with a low utilization, resulting in only 2 tons of $NO_X$ in the 2021 ozone season. Therefore, the EPA agrees it is unlikely that any significant cost-effective emission reduction opportunities exist at this facility. In addition, California has highlighted the retirements of the Redondo Beach units and the ACE Cogeneration facility. The EPA has confirmed the retirements of these and other units in California in the IPM version 6 – Summer 2021 Reference Case database.[138] The EPA IPM version 6 – Summer 2021 Reference Case uses the National Electric Energy Data System (NEEDS) v6 database as its source for data on all existing and planned-committed units. Units are removed from the NEEDS inventory only if a high degree of certainty could be assigned to

[137] The EPA reached this proposed conclusion for EGUs in California in the context of a recent proposed federal implementation plan and proposes the same conclusions for these sources in this action. *See* "Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard," 87 FR 20036, 20088 (April 6, 2022).

[138] The "Capacity Dropped" and the "Retired Through 2023" worksheets in NEEDS list all units that are removed from the NEEDS v6 inventory – NEEDS v6 Summer 2021 Reference Case. This data can be found on the EPA's website at: *https://www.epa.gov/airmarkets/national-electric-energy-data-system-needs-v6*.

future implementation of the announced future closure or retirement. The available retirement-related information was reviewed for each unit, and the following rules are applied to remove:

i) Units that are listed as retired in the December 2020 EIA Form 860M;

ii) Units that have a planned retirement year prior to June 30, 2023 in the December 2020 EIA Form 860M;

iii) Units that have been cleared by a regional transmission operator (RTO) or independent system operator (ISO) to retire before 2023, or whose RTO/ISO clearance to retire is contingent on actions that can be completed before 2023;

iv) Units that have committed specifically to retire before 2023 under federal or state enforcement actions or regulatory requirements;

v) And finally, units for which a retirement announcement can be corroborated by other available information. Units required to retire pursuant to enforcement actions or state rules on July 1, 2023 or later are retained in NEEDS v6.

The majority of the EGUs in California have emissions controls and are sufficiently regulated, resulting in the lowest fossil fuel emission rate and highest share of renewable generation among the 26 states examined at the EPA's Step 3 analysis for the proposed Federal Implementation Plan Addressing Regional Ozone Transport for the 2015 Ozone National Ambient Air Quality Standard. 87 FR 20036, 20088. The EPA evaluated the EGU sources within the state of California and found there were no covered coal steam sources greater than 100 MW that would have emissions reduction potential according to the EPA's assumed EGU SCR retrofit mitigation technologies. The $NO_X$ emission level for California was unchanged at 1,216 tons of $NO_X$ across the various emission control scenarios. The EPA's Step 3 analysis, including analysis of the emissions reduction factors from EGU sources in the state, therefore resulted in no additional emission reductions required to eliminate significant contribution from any EGU sources in California.

The EPA proposes that California's Step 3 analysis was likewise insufficient for non-EGU stationary sources. But whereas EPA is able to conclude, based on the foregoing analysis, that additional emissions reductions are not required from EGU sources in California, we can reach no such conclusion with respect to other industrial sources of emissions in the State. For non-EGUs, CARB did not complete an evaluation of cost effective control opportunities, and instead simply provided a cursory analysis that provided a few examples of regulations to conclude that "further emission controls would be unlikely to reduce any potential impact on downwind states' air quality[.]"[139] CARB did not investigate additional potential emissions control opportunities, or their costs or impacts, or attempt to analyze whether, if applied more broadly across linked states, the emissions reductions would constitute the elimination of significant contribution on a regional scale.

The EPA acknowledges that it has previously approved California's 2008 ozone NAAQS transport SIP at Step 3 based on a relatively cursory review of California's existing emissions control programs. See 83 FR 65093, 65094-95 (Dec. 19, 2018). That approval pre-dates the D.C. Circuit's decision in *Wisconsin v. EPA*, 938 F.3d 903 (D.C. Cir. 2019), in which the court found the EPA had not properly justified failing to analyze emissions reduction opportunities from industrial sources outside the power sector. *Id.* at 918-20. At that time, the CSAPR Update had only addressed reductions from the power sector and applied a cost threshold of $1400 per ton. The EPA's analysis of California focused on the fact that California's EGU fleet was very well controlled and that all receptors for the 2008 ozone NAAQS were projected to be clean by 2023. 83 FR 65093, 65095. The EPA engaged in an extremely limited review of other emissions control opportunities in California at non-EGU industrial sources, despite acknowledging that these sources emitted 6.7 times as much $NO_X$ as EGUs, and 19 large stationary sources each individually emitted over 500 tons per year. *Id.*

[139] Id. at A4-55.

The EPA finds that good reasons exist for no longer considering such a cursory analysis of emissions reduction opportunities beyond the power sector to be adequate for purposes of CAA section 110(a)(2)(D)(i)(I). First, the EPA and the states are implementing the more stringent 2015 ozone NAAQS of 70 ppb. Under that more stringent NAAQS, our analysis at Steps 1 and 2 indicates a continuing linkage between California's emissions and persistent air quality problems (at least through 2026) in other states in the EPA's modeling. Further, while California may be relatively "well controlled" as a state overall on a per capita basis, the same could be said of other states throughout the country that continue to contribute above 1 percent of the NAAQS to at least one out of state receptor despite relatively stringent ozone-precursor emissions control programs. In the CSAPR Update and the Revised CSAPR Update, the EPA has found that states such as New York and New Jersey may nonetheless be found to have additional emissions control obligations in order to address their significant contribution under Section 110(a)(2)(D)(i)(I).[140] Further, the relevance of a per capita emissions rate, which CARB cites as relatively low for California, is not readily apparent. California is a large and very populous state, and by CARB's own admission, total $NO_X$ emissions from the State are second highest in the country, behind only Texas. Finally, the EPA recognizes the critical importance of consistency in application of good neighbor requirements across all states, especially with respect to regional-scale pollutants such as ozone. The EPA's regional analysis in the proposed FIP (discussed below) indicates emissions control opportunities at non-EGUs in California at the same stringency as EPA's Step 3 assessment of 22 other states. Therefore, for all of these reasons, the EPA does not view the degree of analysis at Step 3 that supported approval in the prior California transport action to be sufficient to justify approval in this case.

The EPA notes that in the proposed FIP for California for the 2015 ozone NAAQS, we identified several potential cost-effective $NO_X$ controls for non-EGUs in California.[141] The

[140] See, e.g., "Disapproval of Interstate Transport Requirements for the 2008 Ozone National Ambient Air Quality Standards; New York and New Jersey", 86 FR 60602 (November 3, 2021).
[141] 87 FR 20036 (April 6, 2022).

EPA's non-EGU analysis in the proposed FIP focused on several industrial sectors and found impactful emissions reduction opportunities up to $7500 per ton, which the EPA proposed are needed to address 23 upwind state's (including California's) good neighbor obligations for the 2015 ozone NAAQS. See 87 FR 20036, 20089-90. In particular for California, the EPA found 1,666 tons of ozone season $NO_X$ emissions reduction available from a 2019 baseline of 14,579 tons of ozone season emissions from the non-EGU sectors analyzed. *Id.* at 20090. The EPA proposed to require these reductions in part because, in conjunction with the other emission control strategies proposed in the FIP across the entire region of linked upwind states, the EPA found ozone levels would improve on average by 0.64 ppb across all impacted receptors, including those receptors affected by California's emissions. *Id.* at 20096. The EPA proposed to determine that these controls would eliminate significant contribution and interference with maintenance for the 2015 ozone NAAQS.

The EPA acknowledges that California need not have conducted a Step 3 analysis in precisely the manner as the proposed FIP, and we further acknowledge that our FIP for California and other states is only a proposal at this stage and is currently undergoing public comment. Nonetheless, the proposed FIP presents an example of how a potentially approvable Step 3 analysis could have been conducted by CARB and highlights that cost-effective emissions reduction opportunities likely exist in California that could address interstate transport obligations, which CARB failed to analyze in the 2018 SIP Submittal.

CARB also attempted to support its conclusion that California does not significantly contribute to nonattainment or maintenance in other states in part because it suggested that emissions originating from outside California, such as local emissions in Arizona and Colorado, as well as international emissions, and wildfires, were the primary driver of higher modeled design values at monitoring sites in those states using the EPA modeling released with the January 2017 NODA and the October 2017 memorandum.[142]

[142] See California's 2018 Submittal at A4-33-A4-34, A4-44.

With respect to local, international, and non-anthropogenic emissions contributions, CARB's reasoning is inapplicable to the requirements of CAA section 110(a)(2)(D)(i)(I). The good neighbor provision requires states and the EPA to address interstate transport of air pollution that contributes to downwind states' ability to attain and maintain the NAAQS. Whether emissions from other states or other countries also contribute to the same downwind air quality issue is irrelevant in assessing whether a downwind state has an air quality problem, or whether an upwind state is significantly contributing to that problem. States are not obligated under CAA section 110(a)(2)(D)(i)(I) to reduce emissions sufficient on their own to resolve downwind receptors' nonattainment or maintenance problems. Rather, states are obligated to eliminate their own "significant contribution" or "interference" with the ability of other states to attain or maintain the NAAQS.

Indeed, the D.C. Circuit in *Wisconsin* specifically rejected petitioner arguments suggesting that upwind states should be excused from good neighbor obligations on the basis that some other source of emissions (whether international or another upwind state) could be considered the "but-for" cause of downwind air quality problem. 938 F.3d 303 at 323-324. The court viewed petitioners' arguments as essentially an argument "that an upwind State 'contributes significantly' to downwind nonattainment only when its emissions are the sole cause of downwind nonattainment." 938 F.3d 303 at 324. The court explained that "an upwind State can 'contribute' to downwind nonattainment even if its emissions are not the but-for cause." *Id.* at 324-325. See also *Catawba County v. EPA*, 571 F.3d 20, 39 (D.C. Cir. 2009) (rejecting the argument "that 'significantly contribute' unambiguously means 'strictly cause'" because there is "no reason why the statute precludes EPA from determining that [an] addition of [pollutant] into the atmosphere is significant even though a nearby county's nonattainment problem would still persist in its absence"); *Miss. Comm'n on Envtl. Quality v. EPA*, 790 F.3d 138, 163 n.12 (D.C. Cir. 2015) (observing that the argument that "there likely would have been no violation at all ... if it were not for the emissions resulting from [another source]" is "merely a rephrasing of the

but-for causation rule that we rejected in Catawba County."). Therefore, a state is not excused from eliminating its significant contribution on the basis that international emissions also contribute some amount of pollution to the same receptors to which the state is linked.

In conclusion, at Step 3, we propose that California was required to analyze emissions from the sources and other emissions activity from within the state to determine whether its contributions to nonattainment were significant or interfered with maintenance of the NAAQS in downwind states, and we propose to disapprove the 2018 SIP Submittal on the separate, additional basis that it did not assess additional emission control opportunities.

E. Evaluation of Information Provided Regarding Step 4

Step 4 of the 4-step interstate transport framework calls for development of permanent and federally enforceable control strategies to achieve the emissions reductions determined to be necessary at Step 3 to eliminate significant contribution to nonattainment or interference with maintenance of the NAAQS. As mentioned previously, California's 2018 SIP Submittal did not contain an evaluation of additional emission control opportunities (or establish that no additional controls are required), thus, no information was provided at Step 4. Instead, CARB concluded that the state already has "measures of sufficient stringency to ensure that this State does not contribute significantly to downwind ozone problems, whether they be nonattainment or maintenance, in other states."[143] As a result, the EPA proposes to disapprove California's submittal on the separate, additional basis that the State has not developed permanent and enforceable emissions reductions necessary to meet the obligations of CAA section 110(a)(2)(D)(i)(I) for the 2015 ozone NAAQS.

F. Tribal Consultation

[143] Id. at A4-58

On February 15, 2022, the EPA sent letters to the Morongo and Pechanga tribes inviting consultation on this proposed action.[144] On March 2, 2022, the EPA held an informational meeting with the Morongo Tribe. The Morongo and Pechanga tribes did not request consultation on this Regional action. On April 7, 2022, the EPA opened a 30-day window for federally recognized tribes to request consultation on the national FIP proposal.

G. Conclusion

Based on the EPA's evaluation of California's SIP submission, the EPA is proposing to find that the portion of California's October 1, 2018 SIP Submittal addressing CAA section 110(a)(2)(D)(i)(I) does not meet the State's interstate transport obligations, because it fails to contain the necessary provisions to eliminate emissions that will contribute significantly to nonattainment or interfere with maintenance of the 2015 8-hour ozone NAAQS in any other state.

## IV. Proposed Action

We are proposing to disapprove Enclosure 4 of California's 2018 SIP Submittal pertaining to interstate transport of air pollution which will significantly contribute to nonattainment or interfere with maintenance of the 2015 8-hour ozone NAAQS in other states. Under CAA section 110(c)(1), disapproval would establish a 2-year deadline for the EPA to promulgate a FIP for California to address the CAA section 110(a)(2)(D)(i)(I) interstate transport requirements pertaining to significant contribution to nonattainment, and interference with maintenance, of the 2015 8-hour ozone NAAQS in other states, unless the EPA approves a SIP submittal that meets these requirements. Disapproval does not start a mandatory sanctions clock

[144] Letter dated February 14, 2022, from Elizabeth J. Adams, Director, Air and Radiation Division, EPA Region IX to Mark Macarro, Chairperson, Pechanga Band of Luiseño Indians of the Pechanga Reservation, Re: Invitation to Consult on California's Interstate Transport State Implementation Plan for the 2015 Ozone National Ambient Air Quality Standards; and letter dated February 14, 2022, from Elizabeth J. Adams, Director, Air and Radiation Division, EPA Region IX to Charles Martin, Chairperson, Morongo Band of Mission Indians, Re: Invitation to Consult on California's Interstate Transport State Implementation Plan for the 2015 Ozone National Ambient Air Quality Standards.

for California. The remaining elements of the State's October 1, 2018 SIP Submittal are not addressed in this action and have been acted on in a separate rulemaking.[145]

## V. Statutory and Executive Order Reviews

*A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review*

This action is not a significant regulatory action and was therefore not submitted to the Office of Management and Budget (OMB) for review.

*B. Paperwork Reduction Act (PRA)*

This action does not impose an information collection burden under the PRA, because this proposed SIP disapproval, if finalized, will not in-and-of itself create any new information collection burdens, but will simply disapprove certain State requirements for inclusion in the SIP.

*C. Regulatory Flexibility Act (RFA)*

I certify that this action will not have a significant economic impact on a substantial number of small entities under the RFA. This action will not impose any requirements on small entities. This proposed SIP disapproval, if finalized, will not in-and-of itself create any new requirements but will simply disapprove certain State requirements for inclusion in the SIP.

*D. Unfunded Mandates Reform Act (UMRA)*

This action does not contain any unfunded mandate as described in UMRA, 2 U.S.C. 1531–1538, and does not significantly or uniquely affect small governments. This action proposes to disapprove pre-existing requirements under State or local law, and imposes no new requirements. Accordingly, no additional costs to State, local, or tribal governments, or to the private sector, result from this action.

*E. Executive Order 13132: Federalism*

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[145] 86 FR 16533 (March 30, 2021).

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government.

*F. Executive Order 13175: Coordination with Indian Tribal Governments*

This action does not have tribal implications, as specified in Executive Order 13175, because the SIP revision that the EPA is proposing to disapprove would not apply on any Indian reservation land or in any other area where the EPA or an Indian tribe has demonstrated that a tribe has jurisdiction and will not impose substantial direct costs on tribal governments or preempt tribal law. Thus, Executive Order 13175 does not apply to this action.

*G. Executive Order 13045: Protection of Children from Environmental Health Risks and Safety Risks*

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of "covered regulatory action" in section 2-202 of the Executive Order. This action is not subject to Executive Order 13045 because this proposed SIP disapproval, if finalized, will not in-and-of itself create any new regulations, but will simply disapprove certain State requirements for inclusion in the SIP.

*H. Executive Order 13211: Actions that Significantly Affect Energy Supply, Distribution, or Use*

This action is not subject to Executive Order 13211, because it is not a significant regulatory action under Executive Order 12866.

*I. National Technology Transfer and Advancement Act (NTTAA)*

Section 12(d) of the NTTAA directs the EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. The EPA believes that this action is not subject to the requirements of section 12(d) of the NTTAA because application of those requirements would be inconsistent with the CAA.

*J. Executive Order 12898: Federal Actions to Address Environmental Justice in Minority*

*Populations and Low-Income Population*

The EPA believes the human health or environmental risk addressed by this action will not have potential disproportionately high and adverse human health or environmental effects on minority, low-income or indigenous populations. This action merely proposes to disapprove a SIP submission as not meeting the CAA.

*K. CAA Section 307(b)(1)*

Section 307(b)(1) of the CAA governs judicial review of final actions by the EPA. This section provides, in part, that petitions for review must be filed in the D.C. Circuit: (i) when the agency action consists of "nationally applicable regulations promulgated, or final actions taken, by the Administrator," or (ii) when such action is locally or regionally applicable, if "such action is based on a determination of nationwide scope or effect and if in taking such action the Administrator finds and publishes that such action is based on such a determination." For locally or regionally applicable final actions, the CAA reserves to the EPA complete discretion whether to invoke the exception in (ii).[146]

If the EPA takes final action on this proposed rulemaking, the Administrator intends to exercise the complete discretion afforded to him under the CAA to make and publish a finding that the final action (to the extent a court finds the action to be locally or regionally applicable) is based on a determination of "nationwide scope or effect" within the meaning of CAA section 307(b)(1). Through this rulemaking action (in conjunction with a series of related actions on other SIP submissions for the same CAA obligations), the EPA interprets and applies section 110(a)(2)(d)(i)(I) of the CAA for the 2015 ozone NAAQS based on a common core of nationwide policy judgments and technical analysis concerning the interstate transport of pollutants throughout the continental U.S. In particular, the EPA is applying here (and in other

[146] In deciding whether to invoke the exception by making and publishing a finding that an action is based on a determination of nationwide scope or effect, the Administrator takes into account a number of policy considerations, including his judgment balancing the benefit of obtaining the D.C. Circuit's authoritative centralized review versus allowing development of the issue in other contexts and the best use of agency resources.

proposed actions related to the same obligations) the same, nationally consistent 4-step framework for assessing good neighbor obligations for the 2015 ozone NAAQS. The EPA relies on a single set of updated, 2016-base year photochemical grid modeling results of the year 2023 as the primary basis for its assessment of air quality conditions and contributions at steps 1 and 2 of that framework. Further, the EPA proposes to determine and apply a set of nationally consistent policy judgments to apply the 4-step framework. The EPA has selected a nationally uniform analytic year (2023) for this analysis and is applying a nationally uniform approach to nonattainment and maintenance receptors and a nationally uniform approach to contribution threshold analysis.[147] For these reasons, the Administrator intends, if this proposed action is finalized, to exercise the complete discretion afforded to him under the CAA to make and publish a finding that this action is based on one or more determinations of nationwide scope or effect for purposes of CAA section 307(b)(1).[148]

**List of Subjects in 40 CFR Part 52**

Environmental protection, Air pollution control, Incorporation by reference, Ozone.

**Authority:** 42 U.S.C. 7401 *et seq*.

Dated: May 15, 2022.

Martha Guzman Aceves,
*Regional Administrator,*
*Region IX.*

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[147] A finding of nationwide scope or effect is also appropriate for actions that cover states in multiple judicial circuits. In the report on the 1977 Amendments that revised section 307(b)(1) of the CAA, Congress noted that the Administrator's determination that the "nationwide scope or effect" exception applies would be appropriate for any action that has a scope or effect beyond a single judicial circuit. See H.R. Rep. No. 95-294 at 323, 324, reprinted in 1977 U.S.C.C.A.N. 1402-03.

[148] The EPA may take a consolidated, single final action on all of the proposed SIP disapproval actions with respect to obligations under CAA section 110(a)(2)(D)(i)(I) for the 2015 ozone NAAQS. Should the EPA take a single final action on all such disapprovals, this action would be nationally applicable, and the EPA would also anticipate, in the alternative, making and publishing a finding that such final action is based on a determination of nationwide scope or effect.